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ABSTRACT

The purpose of this paper is to begin the process of bringing conceptual clarity and order to the discussion of competency based education. Toward this end, a number of steps have been taken: (1) the wide variety of educational practices that relate to the concept of competency based education, and the variety of programs that carry the label, have been reviewed and placed in historical perspective; (2) based on this review, a working definition for the concept has been proposed; (3) the implications of this definition for the organization and operation of the schools have been explored; and (4) alternative models of competency based educational programs have been developed to illustrate the variation that can exist in such programs and still be in keeping with the proposed definition. (Author/IRT)

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Alternative Models of Competency Based Education

Second Edition
October 1976

Oregon Competency Based Education Program

Northwest Regional Educational Laboratory
3000 Market Street, N.E., Suite 323
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ALTERNATIVE MODELS
OF
COMPETENCY BASED EDUCATION

Prepared For The Oregon
Competency Based Education Program

By

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PREFACE

This paper represents the results of a year long effort to give meaning to the concept of competency based education (CBE), as that concept is now being used to think about elementary and secondary schooling. Starting in December, 1975 with a three-day conference sponsored by the Northwest Regional Educational Laboratory, an effort has been made to identify and clarify the issues involved in CBE, spell out the rationale and assumptions underlying it, and establish a set of working definitions that will enable people interested in the concept to communicate meaningfully about it. A draft of the present paper was prepared immediately following the December conference (Schalock, Spady and Hathaway, 1976). Reactions to the draft provided a major source of input in preparing the paper as it now stands.

In the initial draft of the paper an effort was made to differentiate between what came to be called the "defining" and "enabling" characteristics of competency based education, and to identify within these the characteristics unique to CBE. An effort was made also to differentiate competency based education from related educational developments, for example, mastery learning and performance based learning, and yet show how CBE incorporates many of these developments. Finally, an effort was made to spell out alternative models of competency based education, and to establish frameworks for making decisions about the design and implementation of programs based upon them. These same lines of inquiry are reflected in the present document, and many of the tentative definitions and agreements reported in the initial draft have been maintained.

A factor which has complicated the preparation of the paper is the fact that its subject matter represents essentially uncharted ground. Work in the area of competency based teacher education served to identify many of the issues dealt with in the paper, and provided the rudiments of a language for dealing with them. The fledgling literature on the application of competency based education in the public schools also proved to be helpful, but that literature is relatively limited. Probably the most important single resource drawn upon in the preparation of the paper was Oregon's newly adopted Minimum Standards For Elementary and Secondary Schools (Oregon Board of Education, 1976), a set of standards that appear to incorporate the full range of concepts associated with a competency based approach to schooling. Much of what is proposed in the paper derives directly from these standards, and from the understanding that has been gained by working with schools and the Oregon Department of Education in attempting to implement them.

Though the paper has been in preparation for nearly a year, it still should be viewed as a working draft. In its present form it has not had wide review, and many of the concepts within it will undoubtedly be modified as experience is gained with them. More importantly many of the interpretations and projections as to impact that appear in the paper are without empirical support. Plans call for the systematic study of competency based education in Oregon, both to determine what CBE means operationally and what its consequences are in terms of costs and benefits, but until such information is forthcoming much of what is proposed must be viewed as speculative. As the process of review proceeds, and as information

is gained about the realities of competency based education when actually implemented, many of the concepts proposed will be refined or simply discarded. Others undoubtedly will emerge. With full recognition that this will be the case it still is hoped that what has been written will be of value both to persons interested in implementing a competency based approach to elementary and secondary education and to those planning research on its implementation.

As the reader will discover, the concept of competency based education is complex, and in many respects illusive, but it also is a concept that holds unusual promise for the improvement of schooling. It is this promise that has prompted the Oregon Board of Education to design the new standards for elementary and secondary schools in the state, and that has prompted the National Institute of Education to sponsor the Oregon Competency Based Education Program as a means of determining whether the promise is real or imagined. Until there is evidence to the contrary, the act of preparing the paper has led the author to believe the promise is real.

ACKNOWLEDGMENTS

I wish to acknowledge a number of sources for the ideas expressed in the paper, and a number of persons who have provided help in its preparation.

I owe a major intellectual debt to the persons who participated in the various conferences sponsored by the Oregon Competency Based Education Program in an effort to understand the nature and implications of competency based education. In this regard I am indebted especially to Dr. Walter Hathaway of the OCBE project staff, Dr's. Don Egge and Mary Hall from the Oregon Department of Education, and Dr's. Paul Cawein and William Spady from the National Institute of Education. I also owe an intellectual debt to the many persons who have fashioned the ideas expressed in the newly adopted Minimum Standards For Elementary and Secondary Schools in Oregon, and the model of competency based education (the Com-Field Model) that has guided the implementation of CBTE in Oregon and the Northwest. These debts are too numerous, however, and extend over too long a period of time, to mention by name.

In addition to acknowledging the intellectual debt owed to Dr's. Hathaway and Spady, I also wish to acknowledge their help and suggestions in preparing both the initial and final drafts of the paper. They have contributed significantly to the structure and organization of the paper, as well as its content.

Finally, I wish to acknowledge the patience, fortitude and competence of Ms. Jan Steger who has been able continually to make sense of jumbled dictation and editorial scrawl. To do so with good countenance is the mark of a genuine professional.

H.D.S.

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INTRODUCTION

The language of competency based education is becoming increasingly common at all levels of education, and in popular as well as professional literature. A number of states have enacted legislation or adopted administrative rules that carry the language, and a number of others are in the process of doing so. As yet, however, there is no agreement as to the meaning of competency based education, and there is little in common between programs that claim to be "competency based".

The language of competence has come to represent an educational movement which places primary emphasis on the outcomes desired of learning, and evidence of outcome achievement, in contrast to the emphasis that has been placed historically in education on materials, procedures, curriculum organization and other strategems designed to facilitate learning. Beyond this general orientation to outcomes and evidence, programs that have adopted the label "competency based" have little in common. The nature of learning outcomes to be pursued varies from the acquisition of knowledge to the mastery of basic skills to the performance of tasks required by life roles. The procedures followed in program operation vary from the administration of a "competency examination" near the end of schooling to a total organization of schooling to support the development of identified competencies. A number of programs that vary along these lines are described in Chapter 2.

The attractiveness of the concept of competency based education can be traced to a number of societal as well as educational conditions. Probably the most powerful of these is the steady erosion of confidence in the public schools and their ability to educate. The apparent lack of ability to design effective educational programs for children from

minority and low-income families has contributed to the problem, and it has been confounded by recent reports of declining test scores and other indicators of marginal performance on the part of high school graduates (Clark and Thompson, 1976). When these circumstances are combined with the sharp increase that has occurred in the costs of schooling during the past decade, the outcry for accountability on the part of our schools is understandable.

Competency based education, with its emphasis on outcomes and evidence of outcome achievement -- and its added emphasis on outcomes that relate directly to performance in life roles -- is seen as an approach to schooling that meets this increasing demand for accountability while overcoming the circumstances that have given rise to that demand.

Another condition that has contributed to the emergence of competency based education is the remarkable progress that has been made over the past decade in the technology of instruction, assessment and information management. The emergence of the performance or goal-based instructional movement, the concept of mastery learning, and the development of tested instructional materials are cases in point. So is the adoption by educators of the principles of applied performance testing that have been used for years in industrial and military settings, and the evolution of the concept of criterion and domain-referenced testing as alternatives to the norm-referenced procedures that have been used almost exclusively by educators in the past. The information storage and retrieval capabilities now available through computer technology, and the evolution of strategies for data management and utilization in decision making, makes it possible to apply effectively the instruction and assessment capabilities presently available to schools. Competency based education makes full use of all these developments.

A third condition that has contributed significantly to the emergence of competency based education is the recent but widely influential history of competency based teacher education. Initiated in 1968 through a grant program funded by the United States Office of Education, competency based teacher education evolved from a series of "models" developed over a two-year period of time to an approach to the preparation of teachers that is now being implemented in the majority of teacher preparation institutions in the nation. In much the same way that states are moving to adopt a competency based approach to graduation requirements at the secondary-school level, twenty states have formally adopted or mandated a competency based approach to teacher preparation as a basis for certification and/or program approval (Merrow, 1974). Many of the concepts and procedures now being used in the design of competency based programs at the elementary-secondary level have been taken directly from the work that has been done in the arena of competency based teacher education. Without this resource the evolution of competency based education would have been much slower, and would have reflected many more false starts than have been observed thus far.

A recent chapter by Gage and Winne in the 1975 yearbook of the National Society for the Study of Education provides an excellent review of the history and issues involved in competency based teacher education for persons interested in this parallel field of endeavor.

In spite of these various developments, or perhaps because of them, there is a great deal of confusion and uncertainty as to the meaning of competency based education. Spady has described the general lack of conceptual clarity with respect to the concept as follows:

> "With over fifteen states currently considering or implementing a range of 'CBE' schemes for their elementary or secondary schools, this uncoordinated movement is rapidly

> transforming into a bandwagon that promises to be the Great American Education Fad of the 1970's. And like most self-respecting fads in American education over the past few decades, this CBE bandwagon cannot be accused of having put its conceptual house in order before launching on its uncharted parade route and accumulating a vast and lively following. Aside from a universal belief in the desirability of student 'competence', the adherents and practitioners of current elementary and secondary school CBE efforts are marching (or parading) in different uniforms to different drummers playing different tunes. Basic definitions, conceptual clarity and analyses of the organizational and social implications of various CBE approaches are badly needed." (1976, p 2)

The purpose of the present paper is to begin the process of bringing conceptual clarity and order to "this bandwagon in search of definition".

Toward this end a number of steps have been taken:

- The wide variety of educational practices that relate to the concept of competency based education, and the variety of programs that carry the label of competency based education, have been reviewed and placed in historical perspective;
- Based on these reviews, a working definition for the concept of competency based education has been proposed;
- The implications of this definition for the organization and operation of schools have been explored; and
- Alternative "models" of competency based educational programs have been developed to illustrate the variation that can exist in such programs and still be in keeping with the proposed definition.

All of these steps are essentially analytical and descriptive. The empirical investigation of competency based education and its implications is being planned, including its impact on student learning and the cost of schooling (Hathaway, et. al., 1976), but under the best of conditions definitive results from these studies will not be available for three or four years. Until this research is in, persons interested in implementing a competency based approach to education will have to rely upon experiential reports of districts or states that have tried it, or papers such as this that attempt to integrate what is known about it.

Two assumptions have undergirded the preparation of the present paper. The first is that competency based education represents a definable and potentially viable approach to schooling in the United States, and one that has a good chance of enabling schools to be more effective and productive than they are at present. The second is that substantial elements within the educational community, as well as the nation at large, are ready to support the basic tenets of a competency based approach to education, and that there is a developing base of understanding and technology to support its implementation. It is not assumed, however, that the definitions and models presented in the paper will or should stand without modification. Competency based education represents an evolving approach to schooling, and it would be pretentious as well as naive to assume that what is proposed in the pages that follow will stand the test of time and experience unchanged. Much has been learned about competency based education within the past several years, however, and it is the view of the author that a solid "first approximation" can be made at this time with respect to both definitions and models. At the very least the paper serves to collect under a single cover much of what is known about competency based education circa 1975-76, and provide a set of reference points against which research and development in the field can proceed.

CHAPTER I. EDUCATIONAL PRACTICES THAT RELATE TO THE CONCEPT OF COMPETENCY BASED EDUCATION

Competency based education is an approach to education that is avowedly eclectic. It builds upon traditional curriculum and organizational structures; it incorporates both old and new approaches to instruction; and it makes use of the wide variety of measurement and information management techniques now available to education. The purpose of this chapter is to provide a brief overview to these various practices, and how they relate to or are incorporated by the concept of competency based education. An effort also is made to show how the various practices relate to one another, both historically and operationally. Without some understanding of what these practices are, and how they relate to one another, the full meaning of competency based education is extremely difficult to grasp.

In an effort to facilitate this discussion, an outline or "map" of the practices that relate to the concept of competency based education has been prepared. As with any schematic, such an outline carries the danger of oversimplification. In this case there is the added danger of inaccuracy for as yet educational historians have not directed their attention to the relationships that are portrayed in it. Be that as it may, the outline represents a first attempt to identify and place in perspective the wide variety of practices that relate to or are encompassed by the concept of competency based education and is portrayed as Figure 1. Hopefully educational historians, or others interested in the forces giving shape to the competency based movement in education, will refine the sketch drawn, for the history it portrays is both fascinating and complex.

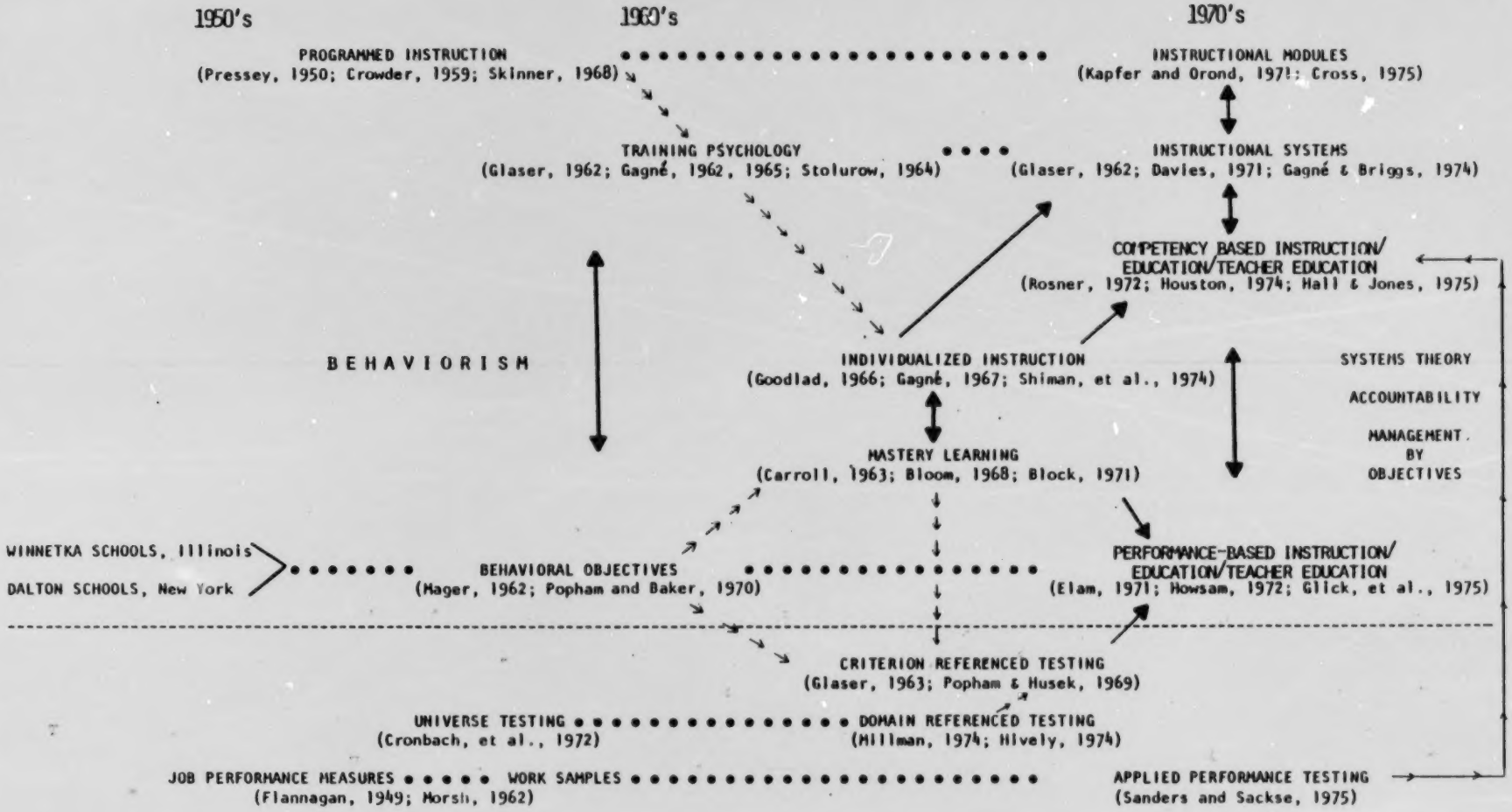

Figure 1. Educational practices that relate to competency based education, an approximation to their interdependence, and some key contributors to their development.

Performance-Based Instruction, Mastery Learning, And Criterion-Referenced Testing

These three educational practices are at the heart of a competency based approach to education. As indicated in Figure 1 both performance-based instruction and mastery learning grow out of a long history of experience with objectives-based instruction. Also, both practices draw heavily upon and have been influenced by the concept of criterion-referenced measurement. In spite of this common heritage, however, the literature pertaining to these two practices suggests they have developed somewhat independently and carry somewhat different points of emphasis. Particular approaches to performance-based instruction and mastery learning, for example, differ with respect to such matters as the extent to which outcomes and assessment are individualized, the extent to which the outcomes expected from instruction are established through community involvement, and the extent to which instructional programs are adapted on the basis of outcomes achieved. Apart from such points of emphasis a number of elements appear to be shared by a majority of instances of both practices:

- A precise statement of the outcomes expected from instruction, with the outcomes being defined in terms of observable student performance;
- Measures of outcome achievement that follow directly from the statement of desired outcomes;
- Standards that spell out clearly the level of performance (criterion) that must be met on each outcome measure for outcome achievement to be judged satisfactory;
- Instructional materials, procedures and activities that link directly to the outcomes desired, and that are known to facilitate outcome achievement if sufficient time, opportunity to repeat and assistance in learning are provided; and
- A system of recordkeeping that provides a means of tracking student performance in relation to outcomes desired.

The Individualization Of The Instruction-Learning Process

Most writers on competency based education have added to the five elements common to most performance-based or mastery learning models the concept of individualized instruction. In the narrowest sense, this means that time is treated as a variable in the achievement of the outcomes desired (Eisele and Alverson, 1975). In the broadest sense, it includes an option for students to negotiate outcomes, the indicators by which outcome achievement is to be evaluated, and the learning activities to be pursued in working towards negotiated outcomes (Schalock and Garrison, 1972).

Treating time as a critical variable in the instruction-learning process is a useful addition to the five elements listed above. If specified outcomes are to be achieved by students who vary widely in ability and background, varying amounts of time must be allowed for outcomes to be met. The broader interpretation of individualizing or personalizing instruction recognizes that individual differences in students extend to the need for variation not only in time, but in learning outcomes, and in learning activities that lead to the achievement of outcomes. It also recognizes that if competence is defined in terms of the performance of tasks in job or life-related roles -- as the Oregon approach to competency based education advocates -- different students will demonstrate a particular competence in different ways. More is said about this subtle but complicating aspect of the life-role approach to competency definition in Chapter 3.

Finally, an individualized approach to instruction builds upon individual differences in instruction, and operationally refutes the perception by many that competency based education is "mechanistic" and

productive of students who know the same things and act in the same ways. Although this is a heavy load for a single concept to carry, a comprehensive approach to individualization gives the concept the breadth and power it needs to do so.

The Application Of General Systems Theory to Instruction And The Program Improvement Process

For a wide variety of reasons, the performance-based and mastery learning models central to competency based education have been viewed from the beginning of the competency based movement as part of a broader framework that has come to be known as general systems theory. In part this reflects the wide-spread interest in systems theory by educators in the late 1960's as a facilitator of comprehensive planning and as a way to respond to the press for school accountability. In part it reflects the philosophic commitment within the mastery learning model, and to a lesser extent in the performance-based model, to students being able to recycle through as many learning experiences as needed until mastery is reached. Finally, it reflects the growing sophistication in the rationale and methodology of program evaluation procedures that view the evaluation process as one that facilitates the continuous adaptation and refinement of an instructional program on the basis of systematic feedback on program effectiveness.

This process of feedback is what makes a competency based approach to education dynamic, and open to rationale change. As such it is one of the most basic and most powerful characteristics of the competency based movement. The general representation of this process is shown in Figure 2.

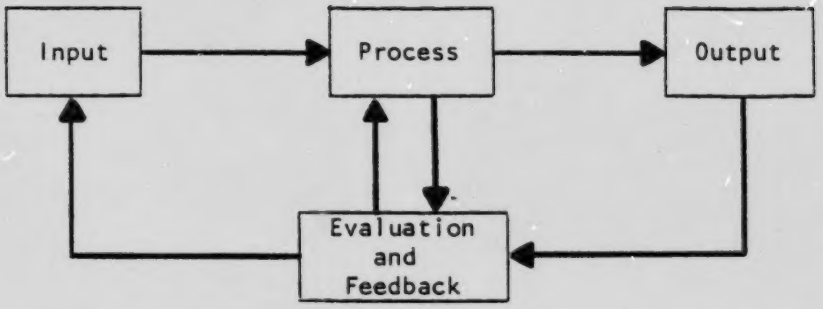

Figure 2. The adaptive/corrective cycle of a systematic approach to instruction and instructional improvement.

Programmed Instruction, Training Psychology And The Development Of Tested Instructional Systems

The history of programmed instruction and the application of principles of learning psychology to personnel training (training psychology) share a great deal in common with the histories of mastery learning and performance-based instruction, but like mastery learning and PBI both have clearly identifiable histories that appear to be reasonably independent. Programmed instruction was one of the first instructional applications of the neo-behaviorism of B. F. Skinner, and what has become known as training psychology has emerged largely from the application of the principles of learning psychology to the training of military and industrial personnel. In turn, the principles and practices developed within the framework of programmed instruction appear to be central to the whole concept of instructional modules (Cross, 1975), and the principles and practices developed within training psychology appear to be central to the concept of tested instructional systems (Gagné and Briggs, 1974).

Technically, instructional modules (units of instruction organized around clearly defined learning outcomes, with pre- and post-instructional measures of the desired outcomes) and tested instructional systems can be

considered as large scale applications of mastery learning or performance-based instruction, but because of their close ties historically with programmed instruction and training psychology they are shown in Figure 1 as deriving essentially from these developments. They can be separated from mastery learning and PBI on another dimension, however, and that is the kind or level of learning outcomes dealt with. Training psychology in particular has focused on the development of learning outcomes that tend to be complex and applied. The most complex of these have to do with the performance of roles in various life settings; for example, a soldier or a factory worker having a particular job to do. As such, the training psychologists have faced many of the same kind of instructional dilemmas that are now being forced on schools by the demand that young people be prepared through the schools to function effectively as adults in present-day society. This renewed focus on the applied in our schools causes the whole literature of training psychology to assume great significance in the competency based education movement.

Job Performance Measures, Work Samples And Applied Performance Testing

These three practices are closely related to the work of training psychologists, but they also draw heavily from the arena of industrial psychology. Their application in the context of schooling represents an important factor in the evolution of competency based education.

Industry and the various branches of the military have used job performance measures and work sample procedures in assessing competence for many years, but the concept has been slow in coming to education. Teacher preparation programs have employed for many years the essential idea of applied performance testing in the context of internships and

student teaching assignments -- including the ideas of job performance measures and work samples -- but generally speaking, rigorous performance measures have not been applied in this application. The emergence of competency based teacher education programs, however, with their emphasis on the demonstration of competence in field settings, has begun to bring the rigor of these practices as applied in areas other than education into the arena of teacher education (cf Schalock, Kersh and Garrison, 1976).

Applied performance measures also are making their way into elementary and secondary education. Examples include the nation-wide program for the Assessment of Educational Progress, the Texas Adult Performance Level program, and the External High School Diploma program sponsored by the state of New York. The Center For Applied Performance Testing established by the Northwest Regional Educational Laboratory in Portland, Oregon has collected the major applied performance measures currently in use in education, and is able to make copies available for interested persons.

The emphasis in competency based education on applied performance testing reflects one of the fundamental distinctions that appears to exist between performance-based instruction and competency based instruction, namely, the nature of the educational outcomes pursued in each. Performance-based instruction, as the more generic term, has tended to focus on outcomes dealing with knowledge acquisition and attitudinal change. Competency based instruction adds to these outcomes that are applied in nature, especially those that reflect the ability to function in life-roles outside of school. More is said about this distinction in Chapter 3.

Accountability, Management By Objectives And Program Planning And Budgeting Systems

It is difficult to determine from the literature the effect the press for accountability in schooling has had on the development of mastery learning and performance-based instruction. Clearly there has been some influence, but it is probably fair to say that both mastery learning and PBI have evolved more from an interest in a particular theoretical approach to instruction than from the dissatisfaction of patrons with the effectiveness of schooling. Administrative guidelines that call for use of "management by objectives" or "program planning and budgeting systems" probably have had an even less tangible influence on the evolution of these particular approaches to instruction, but this is not the case with respect to competency based education. CBE clearly is a response to the demand for school accountability, and it draws heavily upon established management and cost accounting systems. A competency based approach to schooling tends to be "system-wide" in its application (a total school, a district, a state), and as a consequence cannot avoid being concerned with wide-ranging management and cost considerations. These also are considerations that are essential to any approach to schooling that is to be "accountable".

The particular mix that CBE gives to the ideas of mastery learning, the individualization of instruction and assessment within the context of mastery learning, and the press for at least a minimum set of outcomes of schooling tied directly to performance in out-of-school contexts provides the basic ingredients for an approach to schooling that is not only accountable but responsive to individual differences in students and communities. When these features are combined with the concepts of program adaptation and improvement that are possible through the application

of systems design principles, and resources are linked directly to outcomes desired and to program improvement activities designed to bring them about, competency based education represents an approach to schooling that has some chance of meeting the increasingly heavy demands being placed upon our schools.

Implications For The Definition Of Competency Based Education

The range of educational practices that relate to or are encompassed by the concept of competency based education provides a quandry as to definition. How many of the various practices and procedures reviewed in the preceding pages should be included in a definition of CBE? Should it be so broad as to encompass all of the practices that relate to it, or should it highlight only a few that are of critical importance? A major contribution of a competency based approach to education appears to lie in its promise to integrate and articulate major developments that have proved effective in education over the past several decades, along with the traditional practices of education that continue to serve students well. But what is to be made of this by way of definition? Can a single definition of CBE ever do the concept justice?

However competency based education comes to be defined it is clear that it will be an "emerging" definition, one that is shaped by the practices and understandings of a particular point in time but not rigidly determined by them. Chapter 2 contains a review of current programs identified as being competency based in their mode of operation, and shows how these various practices are being applied in the name of CBE.

Before moving to the next chapter it needs to be pointed out that by attempting to integrate many of the various concepts and practices that have emerged in education over the past few decades, competency based

education may provide the education community a much needed service. At the same time it invites that community to be suspicious. The service would come from defining an approach to education that makes integrated use of the best that education has to offer at this time, both conceptually and procedurally. Within the context of CBE, for example, the ideas of mastery learning, criterion-referenced measurement, and the personalization of the instruction-learning process become not only compatible but necessary parts of a whole. The basis for suspicion comes with the presumption that such a list of concepts and practices can be integrated into a sensible whole. While a response of suspicion is understandable, the position taken in the present monograph is that CBE can make integrated sense of a wide range of educational concepts and practices, and in fact puts these various concepts and practices together in such a way that their combined potential far exceeds the potential of any one of them independently. A recent comment by Gary Woditsch captures this point of view nicely.

> CBE's emphasis...is not so revolutionary as reconstructionist. It is unique in that it amplifies and strengthens what has grown weak in educational practice. It does not propose unprecedented new educational objectives or techniques. If it did it would be like countless other approaches to educational reform and innovation. Consequently, it should not be prefigured as a new contestant for educational dominance, but rather as a wise and sympathetic colleague to what is sound in current practice, and a stern but patient critic of what is there that is mindless and rote. (Woditsch, 1976, p 2.)

CHAPTER 2. EDUCATIONAL PROGRAMS IDENTIFIED AS BEING COMPETENCY BASED

A major source of confusion about competency based education is the wide variation in programs labeled as being "competency based". These range all the way from individual school districts that require an examination near the completion of high school to show mastery of basic reading and writing skills, to statewide programs that require evidence of ability to perform the functions required of adults in life-roles outside of school. Some programs have clearly defined instructional sequences that link to the "competencies" to be demonstrated; others have students enter special skill development centers or remedial courses only if a required "level of competence" is not demonstrated. Some require evidence of competence for purposes of graduation; others use evidence of competence only for purposes of program placement while still in school. Generally speaking competency based programs in colleges and universities, including competency based teacher education programs, reflect the same variability (Merrow, 1974; O'Connell and Moomaw, 1975; Schalock, 1975).

All-in-all, there is little consistency in either the form or substance of educational programs identified as being competency based. The variability that exists in this regard leads to concepts, language and examples that make comparison across programs extremely difficult. It also makes communication between people operating such programs difficult, as evidenced in the proceedings of a recent conference on competency based education sponsored by staff responsible for the National Assessment of Educational Progress (NAEP Conference, Denver, 1976).

The purpose of this chapter is to provide a brief overview of the various elementary and secondary programs in the United States that are represented in one way or another as being competency based. For descriptive

purposes these programs have been divided into three groupings: those that pertain to programs sponsored by individual school districts; those that are sponsored by states; and those that are sponsored by districts or states as "external degree" programs. The approach to competency based education that has been adopted by Oregon is described by itself since it is unique in scope and content. The description of programs at the individual district level, and those that take the form of external degree programs, relies essentially upon the information compiled by Clark and Thompson (1976). The description of programs sponsored by states also draws upon the materials prepared by Clark and Thompson, but draws most heavily upon information recently reported by Goor, Tomlinson and Schroeder for the National Center For Education Statistics (1976).

Competency Based Programs Sponsored By Individual Districts

Clark and Thompson have identified ten school districts that claim to have a competency based approach to schooling of one kind or another. These are Anchorage (Alaska), Craig City (Alaska), Los Angeles, Denver, Gary (Indiana), Salt Lake City and Spanish Fork (Utah), the Phillips Academy in Andover, Vermont, the St. Paul Open Schools, and the Westside Community High School in Omaha, Nebraska. Some of these schools require competency demonstration as a basis for graduation, some as a basis for course credit, some as a basis for diagnosis and remediation of basic skills, some for program placement in the context of regular course work, and some as an approach to instruction generally. Table 1 portrays the various uses made of evidence collected about competence by these districts.

As evidenced in Table 1 most districts that have adopted a competency based approach to schooling have done so within the arena of basic skills,

Table 1. Uses Made Of Information On Student Competence By School Districts Who Have Adopted A "Competency Based" Approach To One Or More Aspects Of Schooling

DISTRICTS	USES MADE OF INFORMATION ON STUDENT COMPETENCE			
	A Basis For Graduation	Course Credit And Program Placement Decisions	Diagnosis And Remediation For Basic Skills	A General Approach To Instruction
Anchorage Borough Schools	⊗ (English, Arithmetic Skills)		⊗	
Craig City Schools		⊗		
Los Angeles Schools	⊗ (Reading)			
Denver Schools	⊗ (Reading, Language Usage, Spelling, Arithmetic)			
Gary Schools	⊗ (Reading, Writing, Spelling, Mathematics)			
Phillips Academy	⊗ (Reading, Writing)			
St. Paul Open Schools	⊗ (All subject areas)			
Omaha Westside Community High School	⊗ (Reading, Writing, Oral Communication, Mathematics, Consumerism, the Democratic Process, Problem Solving)			
Salt Lake City Schools				⊗
Spanish Fork Schools		⊗ (Career Educ, Music, Typing Phys. Sc., Geography, Mathematics, Home Economics, Art)		

and most have taken the position that particular levels of competence in these skills must be demonstrated as a basis for graduation. Only one district, however, has moved to obtain this information early in the high school experience, and use it as a basis for remediation; and only one district has moved to make a competency based approach to instruction a general pattern for instruction within the district. Finally, only one of the districts identified by Clark and Thompson obtained measures of competence in the performance of life role functions. The Omaha Westside Community High School requires for purposes of graduation the demonstration of competence as a consumer, as a person who can practice democratic processes, and as a person who can solve problems.

Adult Competency Based Programs That Lead To High School Certification

Two programs were identified by Clark and Thompson that use competency based assessment procedures -- including interviews and on-the-job performance measures -- to determine the possession by adults of the knowledge and skill needed to meet equivalency standards for adult high school diplomas. These are the New York External High School Diploma program and the Texas Aduit Performance Level program. The New York program is described by Clark and Thompson as focusing on "competencies" having to do with purchasing skill, occupational awareness, monetary awareness, and family medical awareness. The Texas program is described as focusing on "competencies" having to do with consumer awareness, societal awareness, and functional literacy. Information can be obtained about these programs by writing, respectively, Dr. Ruth Nickse, School of Education, Syracuse University, Syracuse, New York and Dr. Norvell Northcutt, Program Director, Adult Performance Level Project, University of Texas, Austin, Texas.

Competency Based Education Programs
Sponsored By States

Twenty states and the District of Columbia were identified by Clark and Thompson as either committed to or moving toward a competency based approach to some aspect of schooling. The more recent report by Goor, Tomlinson and Schroeder identified eight additional states moving in this direction. From both reports, it appears that there is as much variability in programs adopted by states as there is in those adopted by individual districts. Using the Clark and Thompson data, twelve of the states moving to implement a competency or performance based approach to education, and the District of Columbia, have chosen to focus on the demonstration of basic skills. These include Arizona, California, Connecticut, Florida, Georgia, Idaho, Louisiana, Maryland, Nebraska, Tennesse, Texas, Virgina, and Washington, D. C. Four of the twenty, however, have yet to determine the particular competency areas to be assessed, or have adopted a position that permits local districts to determine the competencies to be assessed. These include the states of Colorado, Kansas, Michigan and New Jersey.

In only two cases, California and Florida, can students leave school in less than twelve years with a diploma once they have passed the state determined proficiency examination, and in only eight states -- California, Colorado, Georgia, Nebraska, New Jersey, Oregon, Pennsylvania and Virginia -- do either current or pending regulations suggest that instructional experiences need to be provided students to facilitate their performance in desired outcome areas. Even in these states, however, a fully integrated goals-instruction-evaluation-certification approach to schooling is suggested in only a few cases. In most the language merely assures that instructional support should accompany evaluation demands.

The Goor, Tomlinson and Schroeder data expands the information provided by Clark and Thompson. The survey on which their report is based asked respondents to distinguish between basic skills (the "three R's") and life role skills ("capacities needed to perform daily life tasks"), indicate the extent to which programs were operational, and describe the aspects of schooling covered by programs. Tables 2, 3 and 4 summarize these data. They are taken directly from pages 1, 3 and 5 of the Goor, Tomlinson and Schroeder report.

Table 2. Performance-based education (PBE) in the basic skills and life skills: 50 States and District of Columbia, August 1976

PBE activity status	States and D.C.	
	Number	Percent
Total	51	100
With PBE activities	29	57
In basic skills only	5	10
In life skills only	0	0
In both basic and life skills	24	47
With no PBE activities	22	43

Table 3. Student population and status of performance-based education (PBE) in the basic skills and life skills: 50 States and District of Columbia, August 1976

Current status of program	Basic skills		Life skills	
	No. of students (thousands)	Percent	No. of students (thousands)	Percent
Total	46,468	100.0	46,468	100.0
In planning	19,144	41.2	18,275	39.3
Developed but not implemented	311	0.7	455	1.0
Operational	11,723	25.2	11,211	24.1
No plans	15,290	32.9	16,527	35.6

Table 4. Extent of inclusion of program aspects in statewide performance-based education (PBE) plans or programs: 50 States and District of Columbia, August 1976.

Program aspect (in order of appearance on form)	Number and percent of the 29 States reporting some PBE activity					
	Including aspect		Not including aspect		No response	
	Number	Percent	Number	Percent	Number	Percent
New promotion or graduation standards that are performance-based rather than course- or time-based	25	86	2	7	2	7
New proficiency tests for high school entrance	5	17	19	66	5	17
New proficiency tests for high school graduation	22	76	5	17	2	7
Provision for "early exit" from high school	20	69	7	24	2	7
New or revised programs and/or courses	24	83	3	10	2	7
Multiple opportunities to pass a required test of competence	24	83	3	10	2	7
Out-of-school learning opportunities	22	76	5	17	2	7
Local options in determining performance standards or criteria	22	76	4	14	3	10
Production and use of research information	21	72	6	21	2	7

An interesting feature of the data reported by Goor, et al., is the inclusion of the number of students to be served by the programs described. Table 3 is based upon such data. The authors summarize their findings in this regard as follows:

> Performance based educational activities of some type, regardless of the enrollment sizes of the individual tates, were occurring in 29 States with a total combined

> student population of over 31 million. This figure represents about 67 percent of the total public school enrollment in the United States... Performance-based life skills activities were being conducted in 24 states with a combined student population of nearly 30 million, or 64 percent of the U.S. total. (p 3).

It is noteworthy that the programs reported as operational in Table 3 are found in only five states: Arizona, California, New York, Oregon, and Texas. These five states account for approximately one-fourth of the total student population in the United States.

A third source of information about performance based or competency based developments in the states is Spady's "state of the art" paper (Spady, 1976). Based on extensive contacts with state department personnel throughout the nation, he has concluded that only four states aside from Oregon -- California, Michigan, New York, and Pennsylvania -- deserve particular attention over the next few years as sites where current thinking about proficiency or competency based approaches to schooling is taking place. He describes circumstances within these states as follows:

> California is just beginning the first stage of its implementation of recent legislation that enacted several provisions of a 1975 Commission Report on the Reform of Intermediate and Secondary Education (RISE). Included in the legislation is a provision that the reform plans of local districts include mechanisms that assure student promotion and program placement on the basis of demonstrated proficiencies.
>
> Michigan, on the other hand, has no state legislation supporting CBE but a climate that has allowed a number of districts to experiment with criterion-based, open-time instructional and certification systems. These efforts are expected to continue and expand.
>
> During the 1976-77 academic year the New York State Department of Education will be working closely with interested districts in shaping proposals and plans for the implementation of alternative models of CBE. This gradualist approach to working through... CBE implementation on a pilot basis may prove highly profitable in the long run for those districts committed to substantial system changes, but as yet no specific outcome goals have been selected.

Pennsylvania, on the other hand, has been exploring a concept of system reform with a definite competency based orientation called Community Learning. This program would be centered around facilitating student capacities and competencies in five major areas of activity, with a stress on participation outside the school building where appropriate. The areas include a broad range of basic skills, the worlds of work and leisure, community governance and involvement, and a broad range of citizen and personal survival skills. Implementation would proceed along participatory lines similar to those in New York State. (Spady, 1976, pp 17 and 18).

The Approach To Competency Based Education That Has Been Adopted In Oregon

With the adoption on June 23, 1976 of a new set of Minimum Standards for elementary and secondary schools, Oregon established an approach to schooling that assumes a major commitment to a competency based mode of operation. One aspect of this commitment is the adoption of a minimum set of competencies to be demonstrated by students as a basis for graduation. While the new standards do not call for graduation requirements to be fully competency based (course credits and attendance also are required) the demonstration of competence in a number of specified areas is required. The content areas in which course credits are to be earned, and the broad areas in which competencies are to be demonstrated, are specified in the new standards. The specific content to be taught within courses, however, and the specific competencies to be demonstrated within designated areas of competence, are left to the determination of local districts.

In addition to specified outcomes to be achieved, twelve years of school attendance, beginning with grade 1, also is required for graduation. An effort has been made to make this requirement flexible, however, by encouraging local boards to adopt policies that allow individual

program completion in less than twelve school years, credit by examination, and credit for off-campus learning experiences.

The extent of the Oregon commitment to a competency based approach to education extends far beyond these requirements. In fact the state has incorporated within its new standards for elementary and secondary schools essentially all of the educational practices reviewed in Chapter 1 that have come to be associated with the concept of competency based education. Specifically, the new standards call for schooling to be

- OUTCOME ORIENTED (In addition to specifying the competencies to be demonstrated for graduation, each district must specify the learning outcomes desired for students in the district as a whole, the outcomes desired from each instructional program offered in the district, and the outcomes desired from each course within each program);

- COMMUNITY-REFERENCED (In the language of the standards "...local goals are set by schools and communities together to fulfill a mutual responsibility for the education of every student...Each school and its community should establish priorities among the goals to meet local needs, and allocate their resources accordingly");

- CRITERION-REFERENCED (Performance standards must be established and made public for all learning outcomes to be assessed, including the competencies to be demonstrated for purposes of graduation);

- INDIVIDUALIZED (In the language of the standards "... each district shall by 9-1-79 adopt procedures to (1) identify individuals' learning strengths and weaknesses; (2) provide learning opportunities for students responsive to their needs; (3) determine progress students make in their educational program; and (4) maintain student progress records and report the information to parents and students"); and

- OPERATED ACCORDING TO SYSTEMS DESIGN PRINCIPLES (Programs of instruction must be assessed to determine the extent to which they are in fact facilitating the achievement of the learning outcomes desired from them, and be modified until they achieve the outcomes

desired if student achievement indicates they are not successful in this regard).*

In all cases districts are required to show that desired outcomes, at whatever level, are supported by identifiable programs of instruction.

In addition to Oregon's broadly based approach to competency based education, the competencies to be demonstrated for purposes of graduation are broadly conceived. The ten areas within which competencies are to be demonstrated derive directly from six statewide goals that have been adopted by the Oregon Board of Education and endorsed by the citizens of the state. These goals are "...designed to assure that every student in the elementary and secondary schools shall have the opportunity to learn to function effectively in six life roles: INDIVIDUAL, LEARNER, PRODUCER, CITIZEN, CONSUMER, and FAMILY MEMBER". The meanings ascribed to these various life roles are reproduced from the standards in Table 5. The ten areas that derive from these goals in which competence is to be demonstrated for graduation are

- Reading, writing, speaking, listening;
- Analyzing;
- Computing;
- Using basic scientific and technological processes;
- Developing and maintaining a healthy mind and body;
- Being an informed citizen in the community, state, nation;
- Being an informed citizen in interaction with environment;

---

*As the standards now read program assessment is required only with respect to basic skill development. It is assumed, however, that in time the program evaluation requirement will be extended to cover all learning outcomes desired of instructional programs. As a consequence some districts are developing plans and procedures that will permit them to assess the full range of outcomes desired from their various instructional programs, as well as those having to do with the development of basic skills.

Table 5. The Statewide Goals Adopted For Citizens Educated In The Schools Of Oregon, And The Meaning Ascribed To These Goals

GOAL	ASCRIBED MEANING
To be able to function as an INDIVIDUAL	To develop the skills necessary for achieving fulfillment as a self-directed person; to acquire the knowledge necessary for achieving and maintaining physical and mental health and to develop the capacity for coping with change through an understanding of the arts, humanities, scientific processes, and the principles involved in making moral and ethical choices.
To be able to function as a LEARNER	To develop the basic skills of reading, writing, computing, spelling, speaking, listening, and problem-solving; and to develop a positive attitude toward learning as a lifelong endeavor.
To be able to function as a PRODUCER	To learn of the variety of occupations; to learn to appreciate the dignity and value of work and the mutual responsibilities of employees and employers; and to learn to identify personal talents and interests, to make appropriate career choices, and to develop career skills.
To be able to function as a CITIZEN	To learn to act in a responsible manner; to learn of the rights and responsibilities of citizens of the community, state, nation, and world; and to learn to understand, respect and interact with people of different cultures, generations and races.
To be able to function as a CONSUMER	To acquire knowledge and to develop skills in the management of personal resources necessary for meeting obligations to self, family, and society.
To be able to function as a FAMILY MEMBER	To learn of the rights and responsibilities of family members, and to acquire the skills and knowledge to strengthen and enjoy family life.

- Being an informed citizen on streets and highways;
- Being an informed consumer of goods and services;
- Being able to function within an occupation or a program of continuing education that leads to a career.

While a number of the competency areas suggest only knowledge-level outcomes, for example, "Being an informed citizen in the community, state and nation", the intent of competency demonstration in Oregon is that

students be able to apply knowledges, skills and abilities to the performance of tasks encountered in life roles outside of school. This intent is conveyed clearly in the definition of competence that appears within the standards:

> "A statement of desired student performance representing demonstrable ability to apply knowledge, understanding, and/or skills assumed to contribute to success in life role functions."

Table 6 contains a listing of competencies that reflect this intent. Figure 3 illustrates the implications of such an approach to competency definition for performance standards, instruction, remediation, measurement procedures and the like.

One additional dimension of the new standards combines with the features outlined above to further the use of data by schools in decision making, but at the same time make schooling more humane and personalized in its orientation to students. This is the inclusion of a standard that causes the guidance and counseling program within a district to support the educational development of students by fostering

- The development of decision making skills;
- The ability to obtain information about one's self;
- An understanding of opportunities and alternatives available in the educational programs offered by a district;
- Setting tentative career and education goals;
- Accepting responsibility for one's actions;
- Developing skills in interpersonal relationships; and
- Utilizing school and community resources.

While there is not a requirement within the standards for evidence of the achievement of these outcomes in individual students, districts (a) must provide a description of goals pertaining to the development of these

Table 6. Role Related Competencies Being Considered By The Dayton Schools As Requirements For Graduation

I. THE ROLE OF INDIVIDUAL

1. Able to communicate (read, write, speak, listen) at a level of proficiency that enables one to function effectively as an ADULT learner, producer, citizen, consumer, and family member.
2. Able to apply basic computation skills at a level of proficiency that enables one to function effectively as an ADULT learner, producer, citizen, consumer, and family member.
3. Able to establish and maintain a healthy body.

II. THE ROLE OF LEARNER

1. Able to identify one's own interests and abilities in relation to all life roles.
2. Able to learn independently.
3. Able to apply logical processes to the solving of problems.

III. THE ROLE OF CITIZEN

1. Able to describe one's own values in relation to the values that are dominant in one's community of residence.
2. Able to identify the major needs of one's community of residence, and able to determine how best to contribute toward meeting those needs.
3. Able to function as a responsible citizen on streets and highways.

IV. THE ROLE OF CONSUMER

1. Able to manage one's personal property and resources.
2. Able to function as a wise and responsible consumer.
3. Able to analyze the costs and benefits of alternative solutions to environmental problems.

V. THE ROLE OF PRODUCER

1. Able to describe at least three occupations of interest, the short and long term benefits that go with them, and their requirements for entry and success.
2. Able to assess with a reasonable degree of accuracy personal characteristics and abilities that relate to occupational success.
3. Able to find and obtain work.

VI. THE ROLE OF FAMILY MEMBER

1. Able to cope with everyday stresses and problems.
2. Able to function effectively as a member of a social group.
3. Able to apply knowledge of the demands of marriage and family living to personal plans for career and marriage.

DESIRED OUTCOME: Ability to function as a wise and responsible consumer*	ILLUSTRATIVE PERFORMANCE STANDARD	WHERE IN THE CURRICULUM EASIEST TO DEMONSTRATE	PERSON(S) SUGGESTED TO DO THE ASSESSMENT	COURSES MOST DIRECTLY RESPONSIBLE FOR DEVELOPING THE COMPETENCE	REMEDIATION PROCEDURES IF COMPETENCE IS NOT DEMONSTRATED
INDICATOR 1. The student is able to make price and quality comparisons for goods and services.					
1.1 Low Fidelity Measure: A report prepared by a student which (a) analyzes information designed to inform the public of product or service utility and cost, and (b) indicates personal choice of preferred goods or services on the basis of suggested utilities and costs.	1.1.1 A clear, concise and accurate comparative analysis of cost and utility information provided, and a defensible choice of preferred products or services given the cost and utility of information presented. (A GUIDE will be prepared for evaluating the report presented by a student given the particular data sets with which students are to work)	Personal Finance; Modern Problems	Course Instructor	Career Education and Home Economics courses; Mathematics courses	Independent projects; special assistance; repeat a course if all else fails
1.2 High Fidelity Measure: A report of an actual purchase made, and the cost and utility comparisons engaged in prior to the purchase.	1.2.1 Relevant information as to comparative costs, estimated quality, etc. of competing products or services presented in easily comprehended form, accompanied by verification by one or more qual'fd adults as to a student's having actually made the comparisons that are described. (A GUIDE will be prepared for evaluating the report presented by a student against this Standard)	Personal Finance; Modern Problems	Course Instructor	Career Education and Home Economics courses; Mathematics courses	Independent projects; special assistance; repeat a course if all else fails

* Satisfactory performance on the first indicator and at least two of the three remaining indicators of this competence is required for graduation. Each indicator in turn requires both low and high fidelity evidence of accomplishment. The indicators and measures listed here other than #1 are suggestive only; a student may substitute alternative indicators or measures through negotiation with his advisor.

Figure 3. An illustration of the language that has been adopted in Oregon in relation to competency assessment, and the requirements that accompany competency statements by way of assigned responsibilities for instruction, assessment, remediation, etc.

DESIRED OUTCOME: Ability to function as a wise and responsible consumer	ILLUSTRATIVE PERFORMANCE STANDARD	WHERE IN THE CURRICULUM EASIEST TO DEMONSTRATE	PERSON(S) SUGGESTED TO DO THE ASSESSMENT	COURSES MOST DIRECTLY RESPONSIBLE FOR DEVELOPING THE COMPETENCE	REMEDIATION PROCEDURES IF COMPETENCE IS NOT DEMONSTRATED
INDICATOR 2. The student is able to use published resources, knowledgeable others, and consumer assistance agencies when doing comparative shopping.					
2.1 Low Fidelity Measure: A report prepared by a student which identifies publications, persons in the community, and consumer assistance agencies that can be approached when making price and quality comparisons, and a discussion of how these various resources can best be used for this purpose.	2.1.1 An accurate and reasonably complete description of the resources available within a community to assist in comparative shopping. (A GUIDE will be prepared for evaluating the report presented by a student against this Standard)	Personal Finance; Modern Problems	Course Instructor	Career Education and Home Economics courses; Mathematics courses	Independent projects; special assistance; repeat a course if all else fails
2.2 High Fidelity Measure: A report describing the actual use of such resources in making price and quality comparisons for goods and services.	2.2.1 A clear and concise description of the resources contacted in carrying out a comparative shopping study, a judgment as to the utility of the information obtained from each source, and a statement of preference as to sources to be used when doing comparative shopping in future. (A GUIDE will be developed for evaluating a student's report against this Standard)	Personal Finance; Modern Problems	Course Instructor	Career Education and Home Economics courses; Mathematics courses	Independent projects; special assistance; repeat a course if all else fails

Figure 3 (Continued)

DESIRED OUTCOME: Ability to function as a wise and responsible consumer	ILLUSTRATIVE PERFORMANCE STANDARD	WHERE IN THE CURRICULUM EASIEST TO DEMONSTRATE	PERSON(S) SUGGESTED TO DO THE ASSESSMENT	COURSES MOST DIRECTLY RESPONSIBLE FOR DEVELOPING THE COMPETENCE	REMEDIATION PROCEDURES IF COMPETENCE IS NOT DEMONSTRATED
INDICATOR 3. The student is able to exercise the means available to a consumer to obtain a refund or substitution for goods or services purchased that are found to be faulty after purchase, or that do not live up to standards or performance levels suggested through advertising					
3.1 Low Fidelity Measure: A report prepared by a student which describes various procedures that can be followed in obtaining refunds or substitutions for goods and services found to be unacceptable after purchase.	3.1.1 A clear, concise and accurate listing of at least three procedures for obtaining refunds or substitutions for goods and services purchased. (A GUIDE will be developed for evaluating student reports against this Standard)	Personal Finance; Modern Problems	Course Instructor	Career Education and Home Economics courses; Mathematics courses	Independent projects; special assistance; repeat a course if all else fails
3.2 High Fidelity Measure: A report describing either the student's experience in obtaining a refund or substitution for goods and services purchased, or a description of the experience of someone known to the student in this regard.	3.2.1 A clear, concise and accurate description of the experience -- including the goods or services involved -- accompanied by verification by one or more qualified adults as to the validity of the student's description. (A GUIDE will be developed for evaluating the student's report against this Standard)	Personal Finance; Modern Problems	Course Instructor	Career Education and Home Economic courses; Mathematics courses	Independent projects; special assistance; repeat a course if all else fails

Figure 3 (Continued)

DESIRED OUTCOME: Ability to function as a wise and responsible consumer	ILLUSTRATIVE PERFORMANCE STANDARD	WHERE IN THE CURRICULUM EASIEST TO DEMONSTRATE	PERSON(S) SUGGESTED TO DO THE ASSESSMENT	COURSES MOST DIRECTLY RESPONSIBLE FOR DEVELOPING THE COMPETENCE	REMEDIATION PROCEDURES IF COMPETENCE IS NOT DEMONSTRATED
INDICATOR 4. The student is able to exercise consumer protection laws against fraudulent manufacturers, merchants and/or advertisers.					
4.1 Low Fidelity Measure: A report prepared by a student which identifies major consumer protection laws that now exist, and how these laws can be used to the consumer's advantage.	4.1.1 An accurate and reasonably complete listing of the major consumer protection laws now in existence, and a clear and concise description of how these laws can be exercised to the consumer's advantage. (A GUIDE will be developed for evaluating a students' report against this Standard)	Personal Finance; Modern Problems; Business Law	Course Instructor	Career Education and Home Economics courses; Mathematics courses	Independent projects; special assistance; repeat a course if all else fails
4.2 High Fidelity Measure: A report describing either the student's experience in using one or more consumer protection laws to his or her own advantage, or a description of the experience of someone known to the student in this regard.	4.2.1 A clear, concise and accurate description of the experience -- including the goods or services and the protection law(s) involved -- accompanied by verification by one or more qualified adults as to the validity of the student's description. (A GUIDE will be developed for evaluating the student's report against this Standard)	Personal Finance; Modern Problems; Business Law	Course Instructor	Career Education and Home Economics courses; Mathematics courses	Independent projects; special assistance; repeat a course if all else fails

Figure 3 (Continued)

kinds of outcomes; (b) must specify instructional guidance and counseling activities to be followed in achieving these outcomes; (c) must show the assignment of guidance responsibilities within each school that are designed to bring them about; (d) must provide a rationale for these assignments; (e) must show how the guidance and counseling program is coordinated from kindergarten through grade twelve; and (f) must specify the methods and procedures to be used in evaluating the effectiveness of the program in achieving the goals specified.

Clearly, the Oregon approach to competency based education represents a major commitment and a comprehensive design to restructure the nature of schooling at the elementary and secondary levels. It is designed to let everyone within a community, including students, know the outcomes that are desired of schooling, the indicators to be looked to as evidence of outcome achievement, and the effectiveness of programs of instruction in promoting these outcomes. It also is an approach to schooling that is designed to adapt the process of schooling to individual differences in children, and to insure that all children achieve the outcomes desired for them -- at least at a minimum acceptable level.

Perhaps most importantly, it is an approach to schooling that requires evidence of the ability of students to perform the functions required in the various life roles they will assume following graduation from school. It does not treat these as the only outcomes of schooling, but the thrust of the new standards with respect to the demonstration of competence as a basis for graduation is clearly in the direction of the applied. This peculiar and powerful interpretation of competence does not deny the importance of mastering the knowledges and skills that are at the heart of the various programs of study that have been offered by schools in the past. Nor does it interfere in any way with expectations

about the achievement of those outcomes. The new standards simply require in addition to knowledge and skill mastery evidence of the ability to apply the knowledges and skills obtained through twelve years of study to the kinds of tasks faced in day-in and day-out living as an adult after leaving school.

Implications For The Definition Of Competency Based Education

As evident from this brief review the task of defining competency based education does not appear to be simplified by looking to the characteristics of operational educational programs that have been labeled as being "competency based". Should a definition of competency based education be structured to include all of the programs so labeled, or should it in some way be restricted? If a restrictive definition were to be adopted, how restrictive should it be? And how should the defining characteristics be determined? If a definition is too restrictive it suffers the danger of unwise or unnecessary exclusion. But the reverse also is true. If a definition is too inclusive it suffers the danger of losing meaning and utility.

As indicated after the review of educational practices that appear to be encompassed by the concept, the one thing that becomes clear is that any definition proposed will be arbitrary. It also is clear that whatever definition is proposed will need to be viewed as emerging, and as needing to be adjusted with time and further understanding. The definition proposed in Chapter 3 is put forth in this light.

CHAPTER 3. A WORKING DEFINITION OF COMPETENCY BASED EDUCATION

In arriving at a definition of competency based education, it turns out that two definitional questions exist: What is the meaning of competence? and What is the meaning of competency based education? In the pages that follow, both terms are defined. After being defined, some of the subtleties and complexities that have come to be associated with these terms, and that have major impact on program effectiveness and operation are discussed. The chapter closes with a chart that can be used by schools or districts or states that wish to implement a competency based educational program to convey to their patrons and others the characteristics of the program being implemented. The chart is used in Chapter 6 as a means of identifying and portraying "alternative models" of competency based educational programs.

A Formal Definition Of Competence

In everyday, man-on-the-street terms, competence signifies the ability to do something well. Ordinarily the something refers to a job or a complex task -- for example, the ability to manage a business or a farm; the ability to function as a scientist or a surgeon; the ability to play tennis or chess. This everyday use of the term is consistent with its dictionary definition: "Means sufficient for the necessities of life; fitness". Syn: Able, sufficient (Webster's Seventh New Collegiate Dictionary, 1971).

Unfortunately, this general meaning of competence has not been maintained consistently by persons writing about or implementing competency based educational programs. As applied in CBE, competence often has been

equated with performance, without regard for what is to be performed. This has led to a tendency to designate essentially any desired learner outcome as a "competence".

Within such a framework, the acquisition of a new concept, the memorization of a new fact, or the modification of an existing attitude are viewed as "competencies" to be attained. Moreover, such outcomes are treated no differently than outcomes that require the application of such information and attitudes, for example, playing a piano, building a hi-fi set or driving of an automobile responsibly. Nor are they treated differently than outcomes that require an even broader application, for example, the ability to function effectively as a plumber or a homemaker or a physician.

Defining competence as equivalent to the achievement of any outcome attained through schooling robs the concept of competency based education of much of its uniqueness and much of its power. It also ignores the public and educational forces seeking to invest a measure of accountability into the educational process by insisting that graduates demonstrate the ability to function in key life roles outside of school -- however far their learning potential carries them in the attainment of other traditional and non-traditional goals of schooling.

In a recent paper (1975) Gale and Pol acknowledge the confusion that has existed in relation to the definition of competence and assume the task of providing some degree of order to the conceptual disarray that now exists. After consulting a number of dictionaries, within a wide variety of disciplines and in five different languages, these authors conclude that a remarkably consistent and commonly held set of definitions exist with respect to the term. They summarize their conclusion as follows:

> Competence, by definition, is tied to a position or role. The ligatures binding the two are abilities, knowledge, skills, judgment, attitudes and values required for successful functioning in the position or role. That is, possession of the critically required abilities, knowledge, judgment, skills, attitudes and values--and proficient use of the same--is what yields competence in an individual. (p 20)

Gale and Pol go on to define competence formally as: "...the quality of being functionally adequate in performing the tasks and assuming the role of a specified position, including the requisite knowledge, ability, capability, skill, judgment, attitudes and values" (p 21).

From this point of view a "competence to be demonstrated" will always be stated in general terms, and always be tied to a particular role or position. Moreover, the term competence will not be used synonymously with the knowledge, skills, and attitudes that make up competence, or more accurately, that are drawn upon to perform competently. These should be treated either as "enablers" of competence, or as outcomes desired of education independent of their relationship to competence. Such a distinction has served teacher education in Oregon and the Northwest unusually well (Schalock and Hale, 1968; Schalock, Kersh and Horyna, 1970; The Oregon Teacher Standards and Practices Commission, 1974; Schalock, Kersh and Garrison, 1976), and there is every reason to believe it will serve education at the elementary and secondary school level in the same manner. As a consequence, the definition of competence that has been proposed by Gale and Pol is the basis for the definition of competency based education proposed in the next section of the paper.

It is obvious that the adoption of such a view of competence does not in anyway simplify the meaning of competency based education. When such a position is taken a wide range of perplexing issues emerge. For

example, what life roles are to be addressed by a public school? How are schools to determine the knowledge, skills and attitudes that best equip students to function in a particular role? What indicators are to be used as evidence of ability to perform successfully in a particular life role? How are measures of these indicators to be obtained?

At a more immediate level there is the simple question of the form competency statements are to take if they are to be linked to performance in life roles.

While there are no simple and straightforward answers to such questions, they are not so difficult as to defy being answered. Efforts are underway currently in Oregon and Pennsylvania, for example, to work out illustrative answers to questions of this kind, and to demonstrate them in actual practice. The listing of role-related competency statements in Table 6, page 30, and the listing of indicators and measures of outcome achievement in Figure 3, pp 31 to 34 are cases in point. Unquestionably the adoption of a Gale-Pol definition of competence brings problems and added complexity to the operation of schools, but while it adds problems and complexity, it also provides schools a great deal of added leverage in making the difference in the lives of children and youth they are expected to make.

A Formal Definition Of Competency Based Education

Given all that has been said, how should competency based education be defined? In its simplest form, and only suggestive of its full meaning, it is proposed that CBE be defined as

> ...a process that facilitates with a known degree of effectiveness the acquisition of desired outcomes in learners -- including the ability to perform tasks

related to success in job or life roles -- documents the achievement of these outcomes, and links graduation requirements to specific performance levels on a particular set of outcomes.

While relatively long and reasonably exacting, there is much that is not made explicit by this definition. As indicated previously, for example, it does not make explicit what tasks are to be performed for what job or life roles, or how the ability to perform such tasks is to be achieved, or what is to be accepted as evidence of the ability to perform such tasks. By contrast, however, much is made specific by this definition. It signals clearly, for example, that competency based education is a continuously adaptive process with known degrees of reliability in bringing about desired learning outcomes in students; it signals that at least some of these outcomes are to pertain to the ability of students to perform tasks that are defensibly related to the performance of out-of-school job or life roles; and it signals that the process must be sufficiently flexible and broad in scope that it is effective with learners having widely differing interests and abilities.

All of these implications lead to the conclusion that such an approach to education depends heavily on the systematic collection and use of information on the effectiveness of school programs, and the systematic collection and use of information on the success of each student in each program. They also lead to the conclusion that such an approach depends heavily on a commitment to successful learning on the part of all students in a school, not just a high percentage of students. As one superintendent of a large urban district recently put it: "Educators have never accepted the responsibility of achieving success with every student. That's a tall order. And I believe the only way we can develop that institutional frame of mind is by saying that's exactly what we are going to do."

(Robert W. Blanchard, Superintendent, Portland Public Schools, in: "Change And Challenge For Education In The 1970's," p 2).

Competency based education, as it is being defined here, assumes such commitment.

An Operational Definition Of Competency Based Education

Given the formal definition that has been proposed for competency based education, what are the processes that define it operationally? Following the lead of Howsam (1972) a three-level set of processes are proposed: those that constitute the defining characteristics of CBE, those that constitute the enabling characteristics, and those that constitute the unique characteristics. These are discussed in some detail in the pages that follow, and form the basis for a discussion in Chapter 6 of alternative models of competency based education.

The Defining Characteristics

Nothing is contained in the proposed definition of competency based education that detracts from the position taken in Chapter 1 that performance-based and/or mastery learning approaches to instruction are at the heart of competency based education. The elements held in common by these two approaches to instruction are listed on page 8. The definition proposed above, however, suggests that competency based education includes a number of additional elements. Four are particularly critical: (a) the inclusion in lists of outcomes desired from schooling the ability to function effectively in life roles; (b) the identification of a minimum set of these outcomes as needing to be demonstrated as a basis for graduation; (c) rules and procedures that enable students to individualize to

the extent feasible learning programs and assessment procedures; and (d) rules and procedures that assure the continuous adaptation and improvement of instructional programs on the basis of student performance in relation to learning outcomes desired. Adding these elements to those listed on page 8, it is proposed that the essential elements of a competency based education program include

- A listing of outcomes desired from instruction, including outcomes that reflect the ability to function effectively in life roles;
- The identification of a minimum set of these outcomes as those needing to be demonstrated as a basis for graduation;
- Instructional programs that enable students to achieve the various outcomes desired from schooling;
- The means by which to evaluate outcome achievement, and certify that outcomes have in fact been achieved, including
  - measures of outcome achievement that follow directly from the statement of desired outcomes;
  - standards that spell out clearly the level of performance (criterion) that must be met on each outcome measure for outcome achievement to be judged satisfactory;
- Procedures that enable students to individualize learning programs and assessment processes;
- Procedures that enable students to receive instruction until learning outcomes are achieved; and
- Procedures that assure the continuous adaptation and improvement of instructional programs on the basis of student performance in relation to the learning outcomes desired from the program.

These seven processes are put forth as constituting the defining characteristics of a competency based education program. A program missing any one of them would be judged to be not fully competency based.

Some authors argue that two other elements are equally important to the operation of competency based programs, but as yet agreement is not widespread about them. These are the processes of (a) involving members of a community in establishing the outcomes desired from schooling, and in designating the indicators that will be acceptable as evidence of outcome achievement; and (b) systematically determining the costs and benefits associated with each instructional program offered. Since these processes are not widely agreed to, the definition that has been proposed does not make reference to them. Provision is made, however, for identifying these elements in the format that has been proposed for portraying the characteristics of a competency based program to be implemented. Several of the alternative models of competency based education discussed in Chapter 6 take these elements into account, for if included in a model of competency based education they have major implications for the implementation process.

It is recognized that a simple listing of the elements to be included in a particular approach to education are of limited utility in establishing and operating programs that reflect these elements. To fully understand what the elements mean they need to be seen in operation. The next best thing is to see how they might be put together in various "models" of operation -- that is, descriptions of how operating programs might look if the elements were implemented in particular ways. This is the intent of Chapter 6. Less helpful, but perhaps of some additional assistance are both the simplification and the elaboration of the elements that have been listed. Readers who desire simplification are referred to Table 7; readers who desire elaboration are referred to Table 8.

Table 7. A Simplification Of The Defining Characteristics Of A Competency Based Educational Program

OUTCOME/GOAL SPECIFICATION

- Explicit and agreed to by members of the community
- Known to students
- Provide direction to instruction, evaluation, certification
- Some relate to performance in life roles outside of school
- Some are identified as requirements for graduation

INSTRUCTION

- Explicit and known to students
- Linked directly to outcomes to be achieved
- Provides choice and flexibility in learning activities
- Provides choice and flexibility in use of time

OUTCOME/GOAL ASSESSMENT

- Explicit and known to students
- Criterion referenced
- Provides choice and flexibility in mode of assessment
- Provides choice and flexibility in the number of times a particular assessment may be repeated

PROGRAM EVALUATION/IMPROVEMENT

Table 8. An Elaboration Of The Defining Characteristics Of A Competency Based Educational Program

OUTCOME/GOAL SPECIFICATION

- A set of explicitly stated outcomes desired from instruction, including:
  - outcomes that reflect the ability to function effectively in life roles; and
  - the identification of a minimum set of these outcomes to be demonstrated, recorded, and displayed in order to satisfy certification/graduation requirements.

INSTRUCTION

- Instructional programs that:
  - clearly link content and process to the learning outcomes desired;
  - clearly provide alternative learning experiences for outcome achievement; and
  - clearly rely on performance in relation to established standards as a basis for program placement decisions, including program exit and certification decisions.

Table 8 (Continued)

INSTRUCTION (Continued)

- Instructional procedures that individualize the learning process by giving students a voice in the selection of:

  - outcomes to be achieved;
  - learning activities to be pursued while working toward outcome achievement;
  - learning environments within which to pursue outcome achievement; and
  - the time and number of attempts allowed for acquiring desired outcomes.

OUTCOME/GOAL ASSESSMENT

- Assessment systems that clearly identify:

  - the kind of indicators to be accepted as evidence of outcome achievement;
  - how evidence of outcome achievement is to be obtained;
  - the standards that have been set for performance in relation to desired outcomes, i.e., what is to represent an acceptable level of outcome achievement;
  - the procedures to be followed in evaluating performance in relation to standards; and
  - how achievement in relation to desired outcomes is to be recognized and displayed.

- Assessment procedures that individualize the evaluation process by giving students a voice in the selection of:

  - indicators acceptable as evidence of outcome achievement;
  - procedures to be used in assessing outcome achievement;
  - standards set for outcome achievement; and
  - the time and number of attempts allowed for demonstrating outcome achievement.

PROGRAM EVALUATION/IMPROVEMENT

- A set of explicitly stated procedures for assuring the continuous adaptation and improvement of ongoing educational programs through the use of:

  - formative and summative program evaluation data, including data on the appropriateness of outcomes being pursued and, where feasible, data on program costs and benefits;
  - student performance data; and
  - staff performance data, including data on the effectiveness of staff development programs.

In viewing these elements (processes) collectively two features come into sharp focus: the extent to which what is hoped to be achieved and what has been achieved in a competency based program is made explicit, and the extent to which such programs rely upon and make use of data. Both features have advantages and disadvantages so far as the operation of schools is concerned. Being explicit about what is to be achieved enables students and the patrons of a school to see whether the goals being pursued are the goals they wish to have pursued. It also permits students and faculty to clearly understand what is to be achieved and when it has been achieved. The disadvantages of being explicit about expected and achieved outcomes is the invitation it provides to endless debate about what these outcomes are to be, and the means they provide for holding both students and schools responsible for the achievement of the outcomes desired.

Operating educational programs on the basis of data about student performance, program effectiveness, and faculty effectiveness also is a two-edged sword. On the one hand it provides a basis for decision making that is better than best guess, intuition, or impression. On the other hand it is a costly approach to the operation of schools, both in terms of the time and resources required to collect and summarize the data needed and the time and resources required to get it in a form that is useful to decision makers. Dealing with data that pertain to a particular decision can also be disruptive and time consuming, and can make schools more vulnerable to their critics.

Be this as it may, a competency based mode of operation seems to imply that schools are to operate in an unusually public way and with an unusual dependence upon data for decision making.

The list of defining characteristics proposed for competency based education have two other features that come into sharp focus: the extent to which a competency based program is outcome oriented, and the extent to which it is tailored to differences in individuals and settings. In addition to identifying and making known to all concerned the outcomes to be achieved through an educational program, instructional programs are to be designed in terms of the outcomes that are desired and programs are to be adapted or improved on the basis of outcome achievement.

In combination these various features of a competency based approach to education call for schooling to differ in important ways from the approach to schooling found in most communities today. By adding to these characteristics a strong commitment to the need for both students and faculty to adapt outcomes, indicators of outcome achievement, and learning activities to fit their own particular needs, abilities and learning styles, competency based education represents an approach to schooling that approximates what many would consider to be impossibly idealistic. Evidence from the arena of competency based teacher education, however, suggests that such an approach to schooling is an attainable goal, and attainable without a great increase in the resources now available to schools (Schalock, Kersh and Garrison, 1976).

Enabling Characteristics

While the seven elements described above may represent the identifying and essential characteristics of competency based education, they do not constitute an exhaustive nor sufficient set. There remain the questions, for example, of how the outcomes desired from schooling are to be established; how resources and personnel are to be organized to carry out the processes called for by the defining characteristics; how

decisions about curriculum, instruction and resource allocations are to be made; and how the actual operations involved in instruction and assessment are to be carried out. These are the muscle and sinew of any educational program, including those that are competency based. The fact that a program is competency based will have major implications for the form which such enabling aspects of program operation take, but every educational program must have such characteristics, in one form or another, to function at all.

On the basis of the defining features that have been proposed, it would seem that at least three enabling features are required for a competency based program to function optimally:

1. A means for identifying and obtaining agreement on the educational outcomes sought by a district, and a means for insuring that they reflect

   - social conditions, both present and anticipated; and
   - what is known about human development and learning.

2. A means for managing or administering the program which insures

   - the functional linkage of program planning operating and budgeting procedures;
   - an information management system that supports data dependent decision making; and
   - the appropriate preparation, placement and utilization of personnel.

3. A means for arriving at program related decisions that makes explicit for each major category of decision to be made

   - the structure or "mechanism" through which the decision is to be made (e.g., an individual teacher or team of teachers, a departmental or grade level committee, a school-wide committee, a school-community council);
   - the groups to be represented in the decision making process;
   - the procedures to be followed in arriving at a decision; and
   - the data to be considered in arriving at a decision.

These three characteristics reflect two major points of emphasis. The first has to do with ensuring that the outcomes to be pursued in an educational system are appropriate and of high quality. The second has to do with ensuring that the program as a whole functions as planned.

In light of the strong outcome orientation of a competency based approach to education, and in light of the requirement that these outcomes be explicit and agreed to, steps must be taken to ensure that the outcomes to be pursued are those that should be pursued. A competency based program attempting to operate without this characteristic would soon find itself in trouble -- if in fact it were able to be implemented at all.

Much the same rationale can be brought to the issue of program management. If resources and personnel are not wisely used in relation to outcomes to be achieved, and if decisions are not made on the basis of data that are available and in a manner that is in keeping with the public and outcome-oriented stance of CBE, a program would soon find itself in severe difficulty.

While critical in the long run to program operation, the enabling characteristics listed probably do not need to be fully operational when a competency based program is first implemented. It is likely, however, that unless these characteristics are an integral part of planning in relation to program implementation, and unless they are implemented quickly and as completely as resources permit, a district's experience with competency based education will be short and unhappy.

Unique Characteristics

After extensive debate, and after a careful review of the literature pertaining to competency based education and teacher education, it appears

there are only three aspects of the various defining and enabling characteristics that have been outlined that are unique to the idea of competency based education. These are:

- The insistence that a minimum set of the outcomes desired from schooling be defined in terms of the ability of students to function effectively in life roles when they complete school;
- The requirement that a minimum set of these outcomes (competencies) be demonstrated as a basis for graduation from school; and
- The requirement that performance in relation to this minimum set of outcomes be summarized and displayed as part of the certification process.

All of the other characteristics that have been listed as either defining or enabling of competency based education could as well appear in a mastery learning or performance-based approach to instruction.

To some readers this conception may seem to miss the point of competency based education, or to so simplify the meaning of CBE that it denies the promise it ostensibly holds. Perhaps so. But the power of these three features to fundamentally alter the nature of schooling, and to noticeably improve the capacity of young people and adults to function within the context of present day society, should not be underestimated. Coming to grips with what such outcomes should be has the potential of changing relationships between schools and communities, relationships between students and faculty, and the way we think generally about what the outcomes of schooling should be. Recognizing how such outcomes are to be achieved and assessed is likely to change how we think about where and how instruction is to occur, where and how assessment is to occur, who is to be involved in the instruction and assessment process, and the amount of time required for instruction and assessment.

Facing the reality of having to certify that a student has in fact

demonstrated the ability to function effectively in various life roles in out-of-school settings is likely to force schools to take their responsibility for learning much more seriously. It also is likely to cause schools and communities to be much more serious about following graduates to see how in fact they are able to function in out-of-school contexts, and to use this information in defining school programs. Finally, it is likely to bring to the outcome identification process a much more thoughtful, analytic and serious orientation than has been the case typically in the past.

If these consequences occur they must of necessity cause a rethinking of all of the outcomes desired from schooling, and their relationship to those to be required for graduation.

In short, it is possible that what appear on first reading to be three relatively innocuous characteristics of an educational program have within them the power to influence in a major way an entire educational system. Whether they do so depends of course upon the kinds of outcomes identified, the indicators that are to be accepted as evidence of outcome achievement, the seriousness with which evidence is to be obtained on outcome achievement, and the commitment a school and community have to the achievement of such outcomes by students. If meaningful outcomes are established, strong evidence of outcome achievement obtained, and all students are expected to achieve the outcomes desired -- and are offered alternative means of achieving these outcomes that accommodate their interests and abilities -- schooling as it is known in America today will of necessity change.

Some Subtleties And Complexities Embedded In The Definitions Proposed

Each of the elements that contribute to a competency based approach to education contains subtleties and complexities that are not obvious from the descriptions that have been provided thus far. Moreover, these subtleties and complexities tend to increase as elements are combined into an operational program. Chapters 4 and 5 are addressed to these extended meanings, but two aspects of a competency based approach to education contain sufficient subtlety and complexity, and are sufficiently central to all else, that they need to be dealt with prior to these extended dicussions. These have to do with the identification of role-related competencies, and the relationship between such competencies and other outcomes desired from instruction. The subtleties that differentiate performance-based and competency based approaches to education also require further elaboration.

Implications Of The Proposed Definition Of Competence For Program Operation

Defining competence as the ability to function effectively in role-related endeavors has major implications for both the assessment of competence and instruction in relation to the acquisition of competence. Though obviously related, each is treated separately in the paragraphs that follow.

IMPLICATIONS FOR THE ASSESSMENT OF COMPETENCE. As defined by Gale and Pol, the demonstration of competence requires evidence of the ability to apply knowledges, skills and attitudes in the performance of role-related tasks. Ideally this would involve obtaining evidence of related behavior in real-life settings, for example, the performance of the roles of a homemaker in a home; the performance of the roles of a carpenter in the context of a construction project; the performance of the roles of a

teacher in an ongoing school setting; the performance of roles related to being a responsible citizen within the context of a community. However, since access to such real-life settings is often difficult to arrange, and evidence of performance in such settings costly to obtain, something less than the ideal may have to do.

One alternative is to demonstrate the ability to perform role-related tasks under simulated conditions. These may occur within such well established laboratories as the woodworking and automotive shops and the home making facilities maintained by most schools; through "simulation games" that call for the application of knowledge and skill to social situations; or other forms of "applied performance" demonstration that are in use or that could be developed by a creative teacher.

Barring evidence of the ability to apply knowledge and skill in real life or simulated settings, a school may accept as evidence of competence the mastery of knowledges and skills assumed to be needed to perform role-related tasks competently. This of course is less persuasive as evidence of competence, but may for one reason or another be the best evidence that a school is able to manage.

While the decision a school makes about the definition and assessment of competence will always represent a trade-off between what is desired and what is possible, the value gained from strong definition and assessment should not be underestimated. The general assumption is that the stronger the evidence of competence, the better one can predict success in job or life roles following graduation from school, an assumption which in turn becomes important for instruction while still in school and for certifying what a student is likely to be able to do after school. The relationship between kind of evidence about competence and the ability to predict success in out-of-school settings is illustrated in Figure 4.

The rationale underlying Figure 4 is elaborated in papers by Schalock (1971; 1972). The implications for measurement of a definition of competence of the kind proposed by Gale and Pol also has been elaborated by Schalock (1973), and by Schalock, Kersh and Garrison (1973).

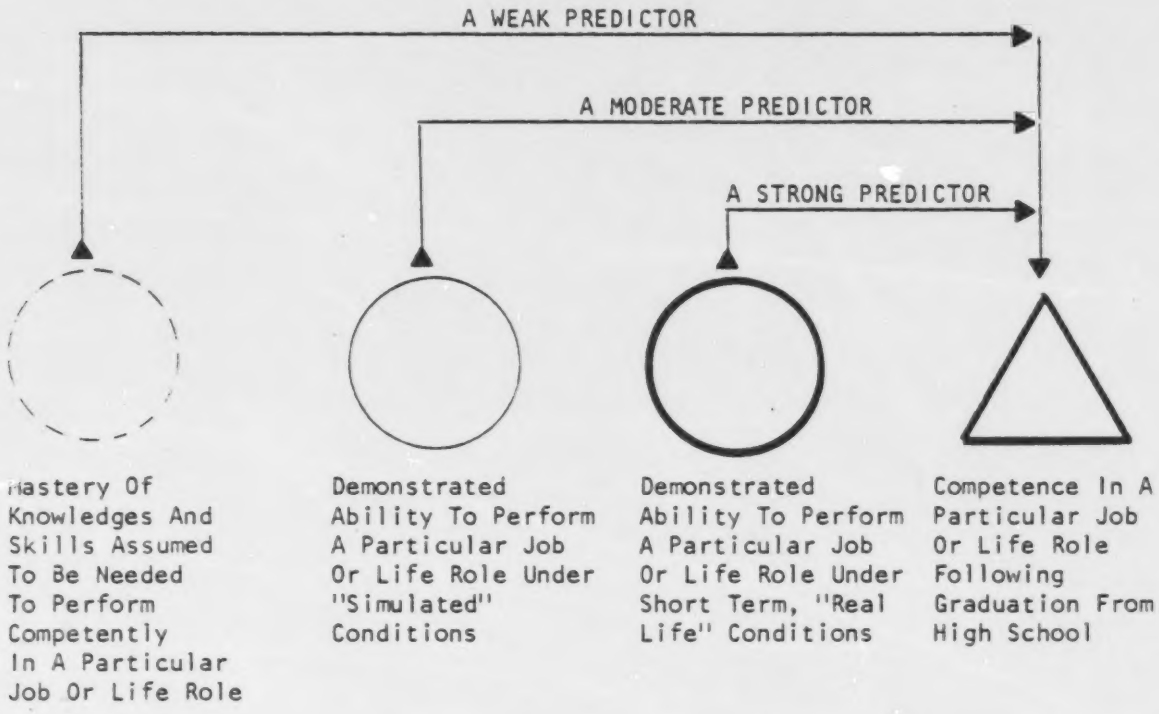
A WEAK PREDICTOR
A MODERATE PREDICTOR
A STRONG PREDICTOR
Mastery Of Knowledges And Skills Assumed To Be Needed To Perform Competently In A Particular Job Or Life Role
Demonstrated Ability To Perform A Particular Job Or Life Role Under "Simulated" Conditions
Demonstrated Ability To Perform A Particular Job Or Life Role Under Short Term, "Real Life" Conditions
Competence In A Particular Job Or Life Role Following Graduation From High School

Figure 4. A representation of the value of alternative school-based measures of competence as predictors of competence in out-of-school settings.

A related implication of the Gale-Pol definition of competence, and one that causes performance standards to assume unusual forms, is the recognition that the demonstration of competence is always idiosyncratic to a particular student assuming a particular job or life role in a particular demonstration context. Gale and Pol have recognized this implication and have stated it forcefully:

> Competence, because it is tied to a position occupied by an individual human being, is highly individualistic, is personal. No two instructional technologists, for instance, will possess the same identifiable sets of skills, abilities, knowledge, etc., nor will they be capable of exercising these to the same degree and level of proficiency. (p 20)

It could be added that students will not only possess a different set of enabling knowledges and skills, and be able to exercise them at differing levels of proficiency, but they would not exercise them in the same way even if they were possessed at the same levels of proficiency. Nor is there need to exercise knowledge and skill in a particular way to carry out a task competently. The old adage of there being 'many roads to Rome" must always apply to the performance of complex tasks. The reality of differences between individuals, and the interaction of these differences in the multitude of settings within which a particular task is performed, will always force homage to be paid to Rome. The papers referred to earlier by Schalock (1973), and by Schalock, Kersh and Garrison (1973) elaborate the implications of this apparent dilemma for assessment.

IMPLICATIONS FOR THE ACQUISITION OF COMPETENCE. The implications for instruction of the Gale-Pol definition of competence parallel closely its implications for assessment. If evidence of competence is to remain at the level of knowledge and skill mastery, instruction need not differ from most instruction that currently goes on in schools beyond its modification to fit a mastery learning or performance based framework. If evidence of competence is required under simulated life conditions, however, or under short term real life conditions, instruction takes on quite different properties. Under these conditions, instruction tends to assume the form of supervision in the performance of role-related tasks. Operationally this means offering assistance in the integration of the knowledges and skills needed to perform a particular task, with assistance being provided

through structured guidance, feedback on successful approximations to performance, etc. To the extent that the demonstration of competence is to take place in simulated, school-based settings, the organization and logistics of such instruction are relatively simple. To the extent that it is to take place in real life, out-of-school settings, organizational and logistic considerations increase in complexity.

In confronting these and other implications of the proposed definition of competence, persons responsible for the implementation of competency based education programs may come to feel that the whole concept of competency based education is impractical, if not downright impossible. The reader needs to be assured that this is not the case, though obviously such a definition has major implications for the nature of instruction and assessment within schools, and the nature of resource allocations that accompany them. Such an approach to competency definition, assessment and instruction has been carried out at the level of teacher education, and a careful analysis of related costs and benefits have demonstrated that it is not only possible but reasonable within essentially the same resources available to non-competency based teacher education programs (Schalock, Kersh and Garrison, 1976) . By drawing upon the experience of such a program, and by attending carefully to the evidence of costs and benefits that have accompanied it, the application of the same principles to the operation of schools should be viewed as both possible and promising.

Competence, Enablers Of Competence, And Enrichers Of Life: Three Broad Categories Of Outcomes That Require Attention In A Competency Based Approach To Education

Discussion thus far about the outcomes of a competency based approach to education have centered primarily on competencies to be demonstrated, that is, the broad categories of outcomes that reflect the ability to

function effectively in critical life roles. Such outcomes clearly are a special focus of competency based programs, but what about the many other kinds of learning outcomes expected from schooling and that traditionally have been attended to by schools? For example, what does competency based education have to say about the acquisition of knowledge? The acquisition of special skills such as the ability to play a musical instrument, the ability to solve complex mathematical problems or the ability to relate sensitively to others? And what about the formulation of attitudes, values, role definitions, and what generally are felt to be the enrichers of life? Does competency based education acknowledge but essentially ignore these basic and far-reaching dimensions of schooling? Does it attend to some of these outcomes but not others? Or does it attend to all categories of outcomes desired from schooling with the same attention that is directed to life role competence?

In a fully operational performance-based program such questions would not need to be asked, for all outcomes desired of schooling would receive the same systematic instruction and assessment. In a fully operational competency based program at least the competencies required for graduation, and the enablers of these competencies, would be attended to in this way. It makes little sense to insist that particular competencies be demonstrated for purposes of graduation without being sure that the knowledges, skills and predispositions demanded by such competencies are in the repertoire of the learner.

Competency based programs have the option, of course, to focus on whatever outcomes are judged to be important or manageable by those responsible for policy decisions about such matters, and so it is completely possible for competency based programs to focus on either a very broad or a very narrow set of competencies and their enablers, or upon the full

range of outcomes desired from schooling. Depending on the breadth and focus of these decisions, a competency based approach to education may extend throughout a district or it may be limited to a relatively small number of the educational programs offered by a district.

The schematic outlined in Figure 5 may help illustrate the point. It represents an attempt to display graphically the various categories of outcomes ordinarily attended to in the course of schooling, and how these categories relate to the special set of outcomes within a competency based program that need to be demonstrated as minimum requirements for graduation. The schematic suggests that at least two and preferably three broad categories of outcomes be represented in the set of outcomes demonstrated for graduation: the basic skills needed to function in life roles; the ability to actually function in life roles; and the knowledge, special skills and/or predispositions that a community holds in highest regard. The outcomes entitled Enrichers Of Life are as critical in a competency based approach to schooling as they are in any other approach, but they may or may not be attended to in as systematic a way as are competencies and the enablers of competence.

The specific outcomes to be attended to within the various categories of outcomes portrayed in Figure 5 will of course be determined by each state and local district. A competency based approach to education makes no assumptions about what the specific content of an educational program should be.

Further Comments On The Need To Differentiate Between Performance Based And Competency Based Educational Programs

Much already has been said about the close relationship between performance based and competency based educational programs. A great deal

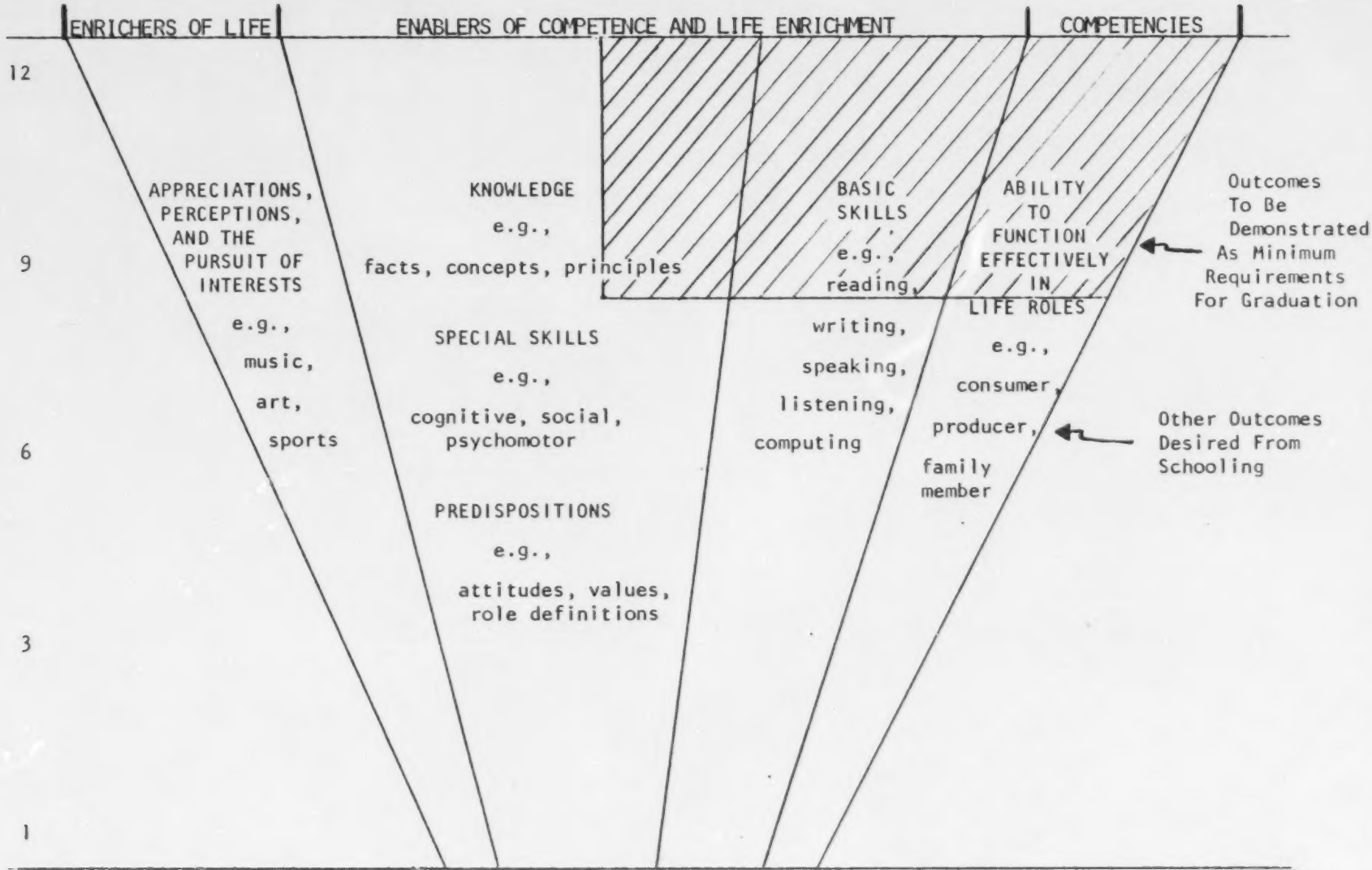

Figure 5. A graphic illustration of the outcomes of schooling to be attended to in a competency based education program, and their interdependence.

of confusion has existed historically, and continues to exist, between the two concepts. Furthermore, there tends to be no systematic distinction between performance based instruction and performance based education, or between competency based instruction and competency based education when probably there should be. On the assumption that there are functional and meaningful differences between these approaches to education, an effort has been made to identify the characteristics that both distinguish and differentiate them. These distinctions are outlined in Figure 6.

On the basis of these distinctions it will be seen that both performance based and competency based approaches to education are unusually complex phenomena. It also will be seen, however, that competency based education, because of its commitment to applied performance outcomes and its insistence that such outcomes be demonstrated as the basis for graduation, is the more complex of the two. This level of complexity is compounded when competency based programs opt for the characteristics listed at the bottom of the figure, an option which competency based programs tend to pursue.

Portraying The Characteristics Of A Competency Based Education Program

Given the many elements that comprise a competency based education program, and the wide range of options within each element, the initial task for a district that wishes to implement a competency based program is to arrive at the particular combination of options that best meet the needs and circumstances within the district. Since the number and kind of options available are legion, the range of combinations possible are essentially endless. Chapter 6 outcomes a number of such combinations, and treats them as "alternative models" of competency based education.

PERFORMANCE BASED INSTRUCTION	COMPETENCY BASED INSTRUCTION
• Outcome Statements • Outcome Measures • Performance Standards • Instructional Programs • Record Keeping Systems • A commitment to continue with instruction until performance standards are met • (The individualization of the instruction-learning-assessment process may apply only to time, but there is no reason for it not to be interpreted more broadly, e.g., to include learning experiences and assessment procedures)	ALL OF THE ELEMENTS LISTED UNDER PBI PLUS • A sub-set of outcomes that relate clearly to performance in life roles (competencies), and • The requirement that a minimum set of outcomes, including the ability to function effectively in life roles, be demonstrated as a basis for graduation • (The individualization of the instruction-learning-assessment process is interpreted as broadly as practical for all learning outcomes pursued in the program, but especially for competencies to be demonstrated for purposes of graduation)
• All of the above, plus • A commitment to refine and revise instructional programs on the basis of student learning until they are optimally effective for all learners	• All of the above, plus • A commitment to refine and revise instructional programs on the basis of student learning until they are optimally effective for all learners

OPTIONS FOR EITHER PBE OR CBE

- A commitment by school faculty to working jointly with students and members of the community in identifying the outcome desired from schooling, and
- A commitment to managing the educational process on an objectives-oriented and cost-effectiveness or cost-benefit basis

Figure 6. Characteristics that distinguish and differentiate performance based instruction and education from competency based instruction and education.

After a district has identified the particular constellation of options to be implemented, a way must be found to convey this to staff and members of the community. In many respects this turns out to be as difficult as deciding upon the particular options to be implemented. To facilitate both the process of program definition and the task of portraying this definition to district personnel and members of the community, a chart has been prepared that permits an implementing district to portray graphically the various characteristics of the program it plans to implement. This chart appears as Figure 7.

In studying Figure 7 it will be seen that only four major dimensions of choice with respect to program characteristics are outlined, even though the proposed definition of competency based education includes seven defining characteristics and three enabling characteristics (see pp 43 and 49). This simplification for purposes of display is made possible by combining several elements into a single dimension, for example, community participation and program evaluation under the PROGRAM OPERATION dimension, and by assuming all four dimensions are simply additions to a performance based approach to instruction and assessment (see the enclosures in the upper left corner and the center of the chart). Moving counterclockwise from the upper right corner, these include the instruction/assessment dimension, the outcome dimension, the program inclusiveness dimension and the program operation dimension. In combination these four dimensions and the assumption of a performance based or mastery learning approach to instruction cover all of the defining and enabling characteristics that comprise a competency based educational program.

The options outlined along each dimension are not exhaustive but they do offer a reasonable sample of the options school districts or states are likely to implement. In combination the options listed provide a

FIGURE 7. DIMENSIONS OF CHOICE IN DEFINING AND IMPLEMENTING A COMPETENCY BASED EDUCATIONAL PROGRAM

A PROGRAM CHARACTERISTIC ON WHICH THERE IS NO CHOICE (POINT A)	THE INSTRUCTION/ASSESSMENT DIMENSION			
	The "Individualization" Of The Instruction/Assessment Process		The "Personalization" Of The Instruction/Assessment Process	
	B	C	D	E
A PERFORMANCE-BASED APPROACH TO INSTRUCTION/ASSESSMENT*	A, plus alternative/negotiable means by which to achieve desired outcomes	B, plus alternative/negotiable time limits within which to achieve desired outcomes	C, plus alternative/negotiable measures of outcome achievement	D, plus alternative/negotiable outcomes to be achieved
I Mastery of knowledge				
II I, plus demonstration of skills				
III II, plus demonstration of attitudes, values and interpersonal orientations				
IV III, plus ability to function effectively in life roles				

THE OUTCOME DIMENSION

* A PERFORMANCE BASED APPROACH TO INSTRUCTION INVOLVES

- A statement of outcomes desired from instruction
- A program of instruction that facilitates the achievement of desired outcomes
- Measures of outcome achievement
- A record keeping system that enables both students and teachers to monitor progress toward outcome achievement

THE PROGRAM INCLUSIVENESS DIMENSION

a. Selected outcomes/units within course(s) _____
b. One or more courses within a building _____
c. Sequences of courses or segments of programs within a building _____
d. Within building programs _____
e. Sequences of courses or segments of programs that cross-cut buildings _____
f. District wide programs _____
g. Total building curriculum _____
h. Total district curriculum _____

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THE PROGRAM OPERATION DIMENSION

1. Student referenced (review, critique, evaluate) _____
2. Student assisted (advise, instruct, assess) _____
3. Community referenced (review, critique, evaluate) _____
4. Community assisted (advise, instruct, assess) _____
5. Short term program evaluation/improvement system _____
6. Long term program evaluation/improvement system _____
7. Outcome achievement a basis for program placement decisions _____
8. Outcome achievement a basis for graduation _____

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means of displaying a wide array of programs that vary significantly in focus and operation.

Generally speaking, the chart has been constructed so that programs using small numbers and letters appearing at the front of the alphabet as descriptors are simpler than programs using larger numbers or letters appearing later in the alphabet. In this regard examples of models described in Chapter 6 range from Model IIB-e 7,8 (Model 1) to Model IVE-h 4,5,6,7,8 (Model 6). Readers interested in seeing how the various models dealt with in Chapter 6 are described by using the chart are referred to Figure 8, p 116 and Figure 13, p 149. Comparable charts are provided for all models described.

CHAPTER 4. IMPLICATIONS OF COMPETENCY BASED EDUCATION FOR THE ORGANIZATION AND OPERATION OF SCHOOLS

Even though competency based education is largely an extension or refinement of what schools already are doing, its adoption will influence how schools are now organized and operated. The nature of these implications will of course vary with the specific program characteristics adopted, for example, the nature and range of learning outcomes to be demonstrated as a basis for graduation, but if the definition of competency based education that has been proposed in Chapter 3 is accepted, the organization and operation of schools will undergo considerable change. The purpose of this chapter is to suggest what some of these changes might be.

Each of the proposed defining and enabling characteristics of competency based education programs is treated separately in the chapter, for each carries its own implications for the organization and operation of schools. Some related implications also are spoken to, for example, the cost of schooling and the amount of work required of students, but these are treated topic by topic. The full range of implications that come with the adoption of particular configurations of defining and enabling characteristics are treated in Chapter 6 as "alternative models" of competency based education.

Before proceeding it needs to be pointed out that the discussion that follows is necessarily general. Specific implications can be dealt with only after a school or district makes specific decisions about the nature and content of the various defining and enabling characteristics to be implemented. Some of the many options that exist for schools in this regard are outlined in Chapter 5.

Outcome Identification

Perhaps more than anything else, competency based education is seen as a means of clarifying the outcomes desired from education, extending these outcomes beyond those typically pursued by schools, and insisting upon clear evidence of the achievement of a particular set of outcomes prior to graduation. In many respects the process of goal setting in a competency based education program is much like that in traditional programs in that

- The broad outcomes desired by a community of its schools are to be specified;
- The programs of instruction offered by schools within a community, and the outcomes expected from them are to be consistent with these broad outcomes;
- The courses offered by schools within a community, and the outcomes expected from them, are to be consistent with the broader outcomes; and
- All of the above are to be guided by an analysis of conditions affecting graduates of education programs in the future, as well as an up-to-date knowledge of what is known about human development and learning.

Such goal setting procedures are only a beginning, however. A competency based approach to education requires two additional steps:

- An insistence that a minimum set of outcomes desired from schooling be stated in terms of the demonstrated ability to function effectively in life roles outside of school (the set of outcomes desired from schooling that are called competencies); and
- An insistence that students demonstrate this minimum set of competencies as a basis for graduation, and that the demonstration of competencies by each student be so certified.

Generally speaking, these steps make the identification of desired outcomes within a CBE mode of operation a more demanding process than it has been traditionally in schools, and as a consequence tends to require that

structures and procedures be established specifically for purposes of identifying the outcomes desired from schooling. More is said of this on pages 92 through 94.

A third practice that is advocated in Oregon as an accompaniment to the goal setting process in CBE adds further to its complexity. This involves identifying the "indicators" of outcome achievement (types of evidence to be looked to in judging whether a desired outcome has been achieved) at the same time that outcomes are being defined. Such a procedure helps clarify the meaning of general outcome statements being considered, and provides clear direction as to how each outcome is to be measured.

When these features are added to the traditional goal setting procedures of education some of the power of CBE becomes apparent. They clarify the goal setting process by pointing to what will be accepted as evidence of goal achievement; they press for the outcomes of education to be thought of in terms of performance in out-of-school contexts as well as within school contexts; they demand that schools go beyond the point of rhetoric about achieving such outcomes, and obtain firm evidence about their achievement; and they require that schools link graduation and certification to the demonstrated achievement of such outcomes. By taking this last step a school system enters fully into the arena of accountability, for it thereby accepts the obligation to offer instructional programs that will enable students to attain the knowledge and skill required to function effectively in out-of-school settings as well as assess their ability to do so.

Outcome Evaluation And Certification

Once desired learning outcomes have been established, a critical next step in a competency based program is determining how these outcomes are to be evaluated, and how students are to be certified as having met or not met the outcomes required for graduation. This is the aspect of schooling that probably is changed most under a competency based approach to education, for typically outcome measurement is a process not well attended to in schools. In CBE it is central. It is in a sense the heart of CBE, for instruction in a competency based program, as well as graduation and certification, is linked directly to outcome measurement. So are the processes of resource allocation, program adaptation, and the wherewithall to give meaning to the concept of school accountability. Of equal importance is the fact that the stance a district takes with respect to evaluation and certification has major impact on the level of complexity introduced to the operation of schools, and the resources required for their operation.

In some respects the demand of competency based education for evidence of outcome achievement is its most powerful feature. Such information permits students to be clear about what they are trying to achieve; it enables them to track the progress they are making; and it enables them to know when they have achieved what they are hoping to achieve. It also permits teachers to be clear about the outcomes both they and their students are trying to achieve. It enables them to track the progress of individual students toward desired outcomes; it enables them to adapt instruction accordingly; and it enables them to know when desired outcomes are achieved so that instruction need not be carried further. These advantages provide a means for the instruction-learning process to be sharply focused and more efficient than otherwise possible.

Finally, evidence of outcome achievement has a number of advantages for school districts as a whole. It enables a district, for example, to be clear about the effectiveness of its various instructional programs, and to share this information with its patrons. It also provides a means of allocating resources for the improvement of weak programs, and for marshalling community support for program improvement on the basis of fact rather than argument and exhortation. It also provides the kind of information about outcome achievement that districts increasingly are called upon to produce.

While the CBE requirement for evidence of outcome achievement is in some ways its most useful feature, it also may be its most troublesome. Standardized measures of achievement do not go far toward meeting the needs of outcome assessment within a competency based program. They do not assess performance in out-of-school settings; they do not attend to many of the skill and attitudinal outcomes that districts desire; and they are not a good means for providing continuous feedback to students and teachers about performance in relation to specific outcomes. In addition, many parents and educators feel they provide inappropriate evidence of outcome achievement, for they are commonly based on a norm referenced approach to measurement rather than a criterion-referenced approach.

As a consequence of such limitations, districts attempting to implement a competency based approach to education are faced with the task of having to develop the tools to assess the vast majority of outcomes desired from schooling, and to do so acccrding to the principles of criterion-referenced testing.

For persons who are knowledgeable concerning the principles of measurement, and for teachers and administrators who know how much time and energy are required to develop sound teacher-made tests, the magnitude of such a task is apparent. Not only is the technology of criterion-referenced testing still primitive, and the number of persons familiar with the technology limited, the resources required to develop and use the technology on a scale implied by CBE are sizeable. Given existing constraints on most school budgets large pools of new resources are not likely to be found, and as a consequence districts that assume a CBE mode of operation must find ways to channel existing resources to the assessment function. They must also find ways to make do with relatively unsophisticated measures of outcome achievement, for the number of such measures to be developed rules against a high degree of sophistication in the immediately foreseeable future.

If funds within a district are channeled to the assessment function, a related decision will have to be made. Should they be placed in the hands of teachers so that the assessment function can be carried out in conjunction with instruction, or should they be placed in the hands of district assessment personnel who would work cooperatively with teachers? This will be a matter of district preference, though obviously the decision made in this regard has major implications for staff development and the ongoing operation of schools.

So there is a dilemma within CBE. On the one hand it offers a set of procedures for the design and operation of schools that stands to improve considerably the quality and utility of schooling. On the other hand it requires knowledge, expertise, and resources that at best are barely within the grasp of today's schools.

Nowhere is this more evident than in the assessment of learning outcomes. While nationwide testing efforts such as Project Talent and the National Assessment of Educational Progress are developing procedures for assessing competence in relation to performance in life roles, much still needs to be done before school districts of average size and with an average resource base will be able to implement an assessment system appropriate to competency based education. Clearly, the long term gains anticipated from the competency based education movement rest in part on the technology of outcome assessment.

The Design And Operation Of Instructional Programs

It has been argued in the preceding pages that the careful and continuous assessment of the outcomes desired from schooling contributes toward the achievement of those outcomes. CBE places an added demand on schools, however, by way of outcome achievement. This is the requirement that instructional programs be linked logically and directly to the outcomes desired from schooling, and that instructional programs be judged successful only when students are able to attain the outcomes desired through the operation of those programs.

Operationally this means that instructional programs, courses within programs, and units of instruction within courses must be established on the basis of outcomes to be achieved rather than disciplines to be taught or course titles to be maintained.

Such an approach to curriculum and instruction has major implications for the structure and operation of schools. One of these is the organization of schools around courses. In a competency based approach to schooling students are likely to engage in modules of instruction designed to

promote particular learning outcomes, instead of enrolling in courses that have the mastery of a particular body of subject matter as their objective. While a number of modules could be linked together in the form of a course, a course structure need not be maintained unless it is judged to be an effective and efficient unit of organization for curriculum development and instruction.

Another implication of linking curriculum and instruction to outcomes to be achieved rather than disciplines to be taught is in the nature and range of learning experiences offered. To remain consistent with the principles and practices outlined in the previous chapter, schools adopting a competency based mode of operation have little option but to provide a wide range of alternative learning experiences for the achievement of each learning outcome desired. The interdependence of the concepts of mastery learning and individual differences in background, ability and learning styles make alternative learning experiences for each outcome a logical necessity.

For learning options to become functional within the context of ongoing instructional programs, however, means must be found by which they can be fully exercised. Minimally, this requires four conditions: (1) a means by which students and instructors can sift through the options available and arrive at the learning activity that appears to be most appropriate for a particular student working toward a particular learning outcome; (2) a means by which a learning experience can be tried a second or third time if the desired outcome is not achieved; (3) a flexible treatment of time in relation to outcome mastery and demonstration; and (4) the offering of alternative learning experiences on a schedule that permits reasonably free and repeated access to them. Most schools reflect in their operation today some of these conditions; few reflect them all.

As in the case of assessment, the practical and financial implications of linking curriculum and instruction to desired learning outcomes are sizable. While the technologies of mastery learning and modularized instruction are reasonably well established the task of translating the instructional program of a school into such a framework, and then preparing faculty to function effectively within it, is one that requires not only a great deal of time and energy, but unusually skillful leadership as well. Also, as Spady has pointed out, there are still other implications that attend such a shift, for it calls into question

> "...three fundamental bases of traditional school organization and practice: (1) the meaning and validity of semesters, quarters, and class periods as bases for organizing instruction and conducting evaluation for certification purposes; (2) the meaning of a course -- which typically consists of as much content as an instructor can fit into a given number of class periods for most students within a given quarter or semester; and (3) grading practices that reflect comparisons across students within semesters ... without a criterion base as a standard. In light of these points, the shift implied by CBE from time-based to outcome-based principles for school organization presents challenges to established and time-honored practices that may be difficult if not impossible to accommodate." (1976, p 7)

Personalizing The Instruction-Learning Process

A competency based approach to education permits the instruction-learning process to be personalized in a variety of ways. The most obvious, and probably the most effective way to do so is through the personalization of the instructional process. In keeping with the preceding discussion this can be done through the provision of

- Alternative learning experiences for the realization of each outcome desired;
- An opportunity for students to negotiate preferred learning experiences, given differences in background, learning styles, and the indicators to be relied upon as evidence of outcome achievement;

- An opportunity to pursue a particular learning activity (and achieve a particular learning outcome) at differing rates of speed and over differing units of time;

- An opportunity to choose to the extent possible the instruction and assessment staff with whom to work in achieving a particular outcome; and

- An opportunity to engage in as many different learning activities as needed, or to work through a particular learning activity as many times as needed, to achieve the learning outcomes desired.

A less obvious but equally effective avenue to personalization is through students being able to negotiate the outcomes to be achieved through schooling, with the exception perhaps of those required for graduation. If school districts adopt this point of view, and also identify only a small number of outcomes to be demonstrated in order to graduate, students essentially should be able to tailor their school programs to their own interests and abilities.

Another way in which a competency based approach to education can be personalized is through students' being able to negotiate the indicators to be used as evidence of outcome achievement. This approach to personalization is based on the recognition that evidence of outcome achievement can take a wide variety of forms, and that one kind of evidence can be as good as another. The following example will serve to illustrate. One student might choose to demonstrate the ability to read at a level required to function in contemporary society (a competence to be demonstrated for graduation) by reading and interpreting correctly the meaning of a series of newspaper articles, legal contracts, merchandise labels, recipes, or automotive repair manuals. Another student might choose to demonstrate the same competence through reading and demonstrating a grasp of the meaning of passages from Shakespeare, articles in popular scientific and technological journals, existing laws and administrative rulings governing

advertising within a state, and a manual for assembling a motor scooter. Either set of indicators would seem to be acceptable as evidence of ability to read at a level required to function effectively in contemporary society, and yet they are sufficiently different in kind to accommodate markedly different interests, and perhaps abilities, in the two students.

Still another way a competency based approach to education can be personalized is through students' being able to negotiate the specific measures to be used in obtaining evidence of outcome achievement, and also the level of performance to be demonstrated on these measures as evidence of satisfactory achievement. These two avenues to personalization link directly to the indicators to be used as evidence of outcome achievement. The specific measures to be used to obtain evidence of the ability to read and understand legal contracts, for example, would be different from the measures used to obtain evidence of the ability to read and understand the meaning of articles on current technological and scientific developments, though the general approach to measurement would be similar. As a consequence of these differences, the level of performance to be demonstrated on these two measures as evidence of an acceptable level of achievement also would differ.

The rationale underlying the assumption of the need to personalize the instruction-learning process within a competency based approach to education is many-sided. From the point of view of the mastery learning model that is central to CBE, the availability of alternative learning experiences and the opportunity to have as much time as needed to achieve an outcome are essential. From the point of view of a student's willingness to engage in learning activities an opportunity to influence a large

proportion of the outcomes to be pursued while in school, and an opportunity to influence the manner in which they are to be achieved, becomes an important consideration. From the point of view of matching instruction to individual differences in background, abilities, and learning styles, the provision of a wide range of learning options, and an opportunity for students and instructors to negotiate the particular set of options that seem to be most appropriate for a particular student working toward a particular outcome, becomes eminently sensible.

Above all, there is the assumption that the opportunity for students to be actively involved in identifying the outcomes to be worked toward in school, actively involved in identifying the learning activities to be pursued in achieving those outcomes, actively involved in identifying the indicators and measures to be used as evidence of outcome achievement, and repeatedly held accountable for the achievement of outcomes as a basis for progressing through school is the best possible kind of learning experience for becoming self-directed adults committed to life-long learning.

Improving The Instruction-Learning Process

The concept of competency based education has emerged as much from the principles associated with a systems approach to education as with any educational movement, and therefore holds as central the principles of feedback and continuous adaptation and correction. Applied to instruction this means, operationally, that an instructional program is viewed always as an approximation to the program ultimately desired, and is subject therefore always to improvement. It also means that for improvement to occur, evidence must be obtained as to the effectiveness of an

instructional program with students, and evidence as to what in the program seems to work and not work. Finally, it means that some provision must be made within a school system to systematically review evidence of program effectiveness, determine what aspects of a program need to be improved, carry out the improvements called for, and resubmit the improved program to the entire testing, evaluation and improvement cycle.

Theoretically, this approach to instruction (and curriculum) improvement is continuous. Practically, it cannot operate in all instructional areas simultaneously, and a point is reached eventually beyond which further improvement of a program is unwarranted so long as the outcomes to be achieved are maintained.

To act in a manner that is in keeping with this orientation to instructional improvement districts need to identify a set of curricular areas in which to carry out such evaluative-adaptative studies, implement the studies, make the changes needed, and then move on to new areas of study. The number of curricular areas to be addressed in a particular year, and the number of times a particular area will be reviewed before the instructional program within it is judged to be acceptable, will depend on an interplay of the resources a district has to give to such activities and the relative effectiveness of instruction within a particular program area. Programs that consistently fail to yield the learning outcomes desired obviously must be improved (or the outcomes desired modified), yet there is a limit to the resources that a district can give to such improvement activities within a particular period of time.

The concepts of general systems theory apply to all aspects of schooling, not just to instruction. Program management and governance procedures, accounting practices, staff assignment and development procedures, support

services such as counseling, busing, and health services, and relationships with parents and other members of the community are as subject to evaluation and improvement activities as instruction. In like fashion, districts are as obligated to design and carry out such activities as carefully and as consistently as they do in the area of instruction. A systems theory view holds that all aspects of schooling are interdependent; that the system as a whole is only as good as its weakest part; and that all aspects must therefore be subjected continuously to evaluation and improvement. Much of the power of a competency based approach to education rests on an honest commitment to these principles, and to the development of procedures and allocation of resources to carry them through. Fortunately, development within the past decade of the methodology of program evaluation has provided many of the tools to implement these ideas.

Involving Parents And Members Of A Community In The Process Of Education

Competency based education is based on two assumptions about the involvement of parents and members of a community in the educative process. The first is that it is desirable to have the patrons of a school be involved in policy decisions that affect the design and operation of school programs. This rests on two premises: (a) that involving people in planning and policy decisions leads to a feeling of ownership toward the programs that result, and this in turn to a heightened commitment to them, and (b) that commitment to the purposes and programs of a school by its patrons will enhance the likelihood of these programs being successful.

The second assumption is that parents and members of a community are more likely to become involved in the educational process under the conditions of a competency based approach to schooling than they have in the

past. This also rests on two premises: (a) the commitment within CBE to making the outcomes desired from schooling explicit and public, and to extend the outcomes of schooling to include successful performance of life roles, invites the participation of parents and members of the community in deciding what these outcomes should be; and (b) with the adoption of role-related outcomes as legitimate goals of schooling much of the instruction and assessment to be done in relation to the acquisition and demonstration of such outcomes will be carried out by persons in a community other than certificated school personnel. More is said about this in Chapters 5 and 6.

The Management Of Schools

Under the simplest of conditions the management of a school system is a complex undertaking. Unfortunately, the adoption of a competency based approach to schooling adds to its complexity. Having to specify unambiguously the outcomes expected from schooling, making these outcomes public, and ensuring they are supported by the community is one factor that requires a great deal of time and energy on the part of administrators. This is especially the case when a school system adopts outcomes that reflect the ability to function effectively in life roles outside of school. Being sure that evidence is being collected on the effectiveness of instructional programs in achieving the outcomes desired of them, and adapting programs that are not achieving the outcomes desired, also requires a great deal of administrative time and effort. So too does the tracking of progress on the part of students through the various instructional programs offered by a district, the tracking of progress in relation to the competencies to be demonstrated for purposes of graduation, and coordinating the increased involvement of parents and members of the community in the process of education generally.

As yet management structures and procedures have not evolved to accommodate these added complexities. There has been no need for them to since competency based programs only now are becoming operational. Such structures and procedures will emerge as they are needed, however, for if a program is to function at all it must have a functional centralized management system.

One development that is likely to emerge in this regard is the refinement of school management structures in terms of classes of decisions that need to be made within designated levels of school organization. While not altogether different from what is now done administratively, it will sharpen the centralized decision making process by (a) identifying the major categories of decisions that have to be made within a competency based mode of operation; (b) tailoring decision structures and procedures to each particular category of decision to be made; (c) tailoring participants in the decision making process to each category of decision to be made; and (d) tailoring the collection, analysis and reporting of data to be used in the decision making process to the specific requirements of each decision to be made. The assumption underlying such a procedure is that different kinds and levels of decisions require different kinds of structures, procedures, participants and data, and only when all of these are matched will the decision making process be carried out effectively and efficiently within programs as complex as those envisioned here. The decision structure within the competency based elementary teacher preparation program at Oregon College of Education reflects this point of view, as does the Handbook For Program Evaluation that has been developed by the Mid-Willamette Valley Consortium For Educational Improvement. Experience with both suggests the utility of the concept (Schalock, Kersh and Garrison, 1976; Schalock, Keegan, Speulda and Thompson, 1976).

A factor that adds even further complexity to the task of managing a competency based education program is the press upon such programs to operate on the basis of information as to the costs and benefits of programs offered. This is in keeping with the general responsiveness of the competency based movement to the concept of school accountability. While developers of competency based education programs have made no assumptions about such programs costing less than traditional programs, they have assumed that in the long run CBE programs will provide greater benefits per unit of cost than traditional programs. Methodologies for conducting cost-benefit analyses on competency based educational programs are now being developed (Hathaway, 1976; Schalock, Kersh and Garrison, 1976), and should be available for application soon.

The Governance Of Schools

In some respects the governance of schools (the setting and implementation of policy) is made more complex by the adoption of a competency based approach to schooling; in other respects it is made simpler. Factors that add to the complexity of governance include the requirement that students achieve the outcomes of schooling a community deems important in order to graduate; the press for schools to operate on the basis of cost and benefit information about programs of instruction; and the increased participation by parents and members of the community in the process of schooling generally. Factors that tend to reduce the complexity of governance include being clear about the outcomes to be achieved by a district; having good evidence as to the extent to which these outcomes are being realized; and having available good cost and benefit information about alternative programs of instruction.

Depending on local school board response and community militancy, the increased participation of parents and members of the community in the educational process may or may not simplify the governance process. If a board establishes procedures by which parent and community involvement are recognized and utilized, added complexity will be kept to a minimum. If a board chooses not to utilize or recognize community involvement when the community wishes to be involved, complexity will be increased. The impact of a competency based approach to education on the relationship between teacher associations and local boards of education is of yet unclear.

Related Implications

To complete the discussion of implications that follow from adopting a competency based approach to education, some implications of a different kind must be considered. These can be represented best as "Things CBE does not do", and need to be understood in order to maintain a balanced perspective about the competency based education movement. They can be summarized in six statements:

1. The cost of schooling will not decrease.
2. The process of schooling will not be simplified.
3. The work demanded of students will not be less.
4. Differences between students will not be diminished.
5. Students who graduate from a competency based program will not be equally competent.
6. Students who graduate from a CBE program will not be assured of success in later life.

Each of these topics is treated briefly in the paragraphs that follow.

The Cost Of Schooling

In all likelihood a fully operational competency based educational program will be more costly than a traditional program. The trade-off is that both the short and long term benefits gained per unit of cost are likely to be greater for competency based programs. The results of the costs-benefits analysis at Oregon College of Education with respect to teacher education, though limited to an analysis of short term costs and benefits, supports this conclusion.

While the ratio of benefits to costs may favor a competency based approach to education, particularly over the long term, the immediate question is: How much will it cost beyond what education now costs? At present there is no evidence of this kind for the operation of elementary and secondary schools. There is evidence from the OCE study of competency based teacher education, and for whatever it is worth will be reported.

OCE found that it costs the college only $62 per year per student more to operate the professional year of its competency based elementary teacher education program than it did its earlier program, and this program reflects all of the defining and enabling characteristics of CBE proposed in the present monograph. A hidden cost associated with the program is an estimated $510 per student per year cost that is borne by cooperating schools for the added supervision and assessment called for by the new program. (School supervisors spend an average of four and a half hours per week supervising students in the new program, compared to an average of two and a half hours per week in the previous program.) But this added cost to schools appears to be offset by the added benefits that come through teacher participation in the program, and through the contributions that better prepared students make to school programs.

To operate such a program, OCE has had to shift resources formerly

allocated to classroom instruction and assessment (for purposes of knowledge and skill mastery) to supervision and assessment in field settings (for purposes of competency acquisition and demonstration). This same kind of shift probably will need to occur in elementary and secondary programs. In terms of costs and benefits, OCE views this shift in resources as reflecting a reorganization of priorities in terms of kinds of outcomes to be achieved, and thus regards it as a benefit rather than a liability.

Another encouraging finding about cost from the OCE study is the relatively small amount of extra money required for program development. Development costs amounted to only 10 percent of their original estimate, a figure that is essentially unheard of in days of spiraling prices and cost overruns. These figures reflect in part a "make do" philosophy on the part of the OCE faculty and administration, but in large part they reflect the philosophic commitment of the faculty and administration to design and implement a competency based program that can be operated within the resources currently available to the institution.

The Complexity Of Schooling

A competency based approach to education in no way simplifies the educational process. It brings order, direction and clarity of purpose to education, but it does not bring simplicity. The following are major contributors to its complexity: the process of clarifying outcomes and indicators acceptable as evidence of outcome achievement; obtaining trustworthy evidence of outcome achievement; designing instructional programs that provide alternative learning experiences for the realization of outcomes; using evidence of outcome achievement as a basis for program placement and certification decisions; personalizing the instruction-learning-evaluation process; evaluating program effectiveness on the basis of

learning outcomes; adapting programs until they promote the learning outcomes desired; allocating resources on the basis of outcomes desired; and operating programs that prepare staff to function effectively within a competency based approach to schooling.

Fortunately this added complexity is not so great as to make it impossible to manage. In almost all respects competency based education simply represents an elaboration or refinement of what teachers and administrators already do, or would like to do if "the system" were only a bit different. Competency based education represents good pedagogy, and teachers and administrators grasp quickly the principles it embraces. What takes time and energy, and in some cases knowledge and technology that does not yet exist, is the implementation of the principles of CBE within the context of ongoing school programs. The mechanics of assessment, data management, and the personalization of instruction represent major developmental efforts for most schools, and a major reorientation to the instruction-learning process for most teachers. The interaction of the various characteristics that make up a competency based program add even more to their complexity. The experience with competency based teacher education, however, indicates that with time, faculty and administrators learn to function within the context of competency based programs as easily and naturally as they function within present day programs.

Work Demanded Of Students

Competency based education makes no assumption about the amount of work required of students. What it does assume is a different kind of work. Students will be clearer about the outcomes to be achieved; many of these outcomes will be of their own choosing; instruction will be linked more directly to specified learning outcomes; a wider variety of learning

activities will be pursued in achieving particular outcomes; many outcomes will be linked more directly to out-of-school circumstances; a portion of instruction will take place in contexts outside of school; and students will know clearly whether and when desired outcomes have been achieved. In this sense learning will become more goal directed and varied than it often is in school today, and students will assume more initiative in defining both what the outcomes of schooling shall be and what learning experiences are to be purused in achieving them. Whether more or less work will be involved will depend on the nature and number of the outcomes to be worked toward, the level of performance expected in relation to these outcomes, and the number and kind of outcomes pursued that are not required for graduation.

Differences Between Students

Competency based education carries no threat of reducing differences between people. In fact, as CBE is now conceived, it should heighten such differences. A greater clarification of the outcomes desired of schooling, an opportunity for students to select from among these outcomes those that are most appropriate to their own interests and abilities, and some assurance that outcomes pursued will in fact be achieved, are all features of competency based education that are designed to encourage and extend differences between students. The added commitment within CBE to adapting learning activities to individual differences in background, ability, and learning style, and to allow differing amounts of time for individuals to achieve particular outcomes, is also designed to both heighten the awareness of individual differences and to respond to them.

On the basis of what has just been said it probably is obvious that students who graduate from a competency based program will not be equally competent. Many people, however, on first encountering the concept of competency based education, assume that one of its basic premises is to assure that all students going through such a program will be "equally competent" to function in out-of-school contexts. This simply is not the case. Competency based education assures the achievement of a minimum level of competence on the part of those graduating, but not equal competence. In this respect competency based education ensures only the achievement of the foundation of education that a community deems desirable. In every other respect CBE is designed to sharpen individual differences, and enhance each child's achievement in relation to his or her potential.

Such a view of the purposes of competency based education is in part philosophic, and in part a simple recognition of the reality of differences. An approach to education that is not committed to facilitating the optimal growth and development of each child while at the same time assuring a minimum floor of competence for all children, and facilitating both in full recognition of the individual differences involved, would be untenable. On the other hand, an approach to education that assumes that schools can overcome individual differences in learning ability and background to the point that all children can be equally competent would be naive.

A host of factors contribute to competence besides schooling, for example, ability, experiences in the home, energy, and the psychological health and makeup that permits learning to be pursued. Of these various factors, schooling may be the least influential. No matter what the approach to schooling, the reality of individual differences dictates that most students who graduate will reflect minimal competence in some

areas and unusual competence in others. Some students, of course, may be unusually competent in all areas, and others barely competent in any, but differences of this magnitude are rarely attributable to schooling. At best, CBE can ensure a minimum level of competence for dealing with selected life roles, and more should not be expected of it.

Forecasting Performance In Out-Of-School Contexts

Graduates of competency programs will not be assured of success in later life. The work of Jencks et. al., (1972) and others has demonstrated the tenuous linkage between schooling and success in life, and apparently it is even more tenuous than was suspected in the past. Success in life is a function of a multitude of circumstances, and depends only in part on specific competencies. Moreover, success is determined by performance in a number of life roles where a wide range of competencies come to bear.

While school cannot ensure success in life, it can enhance each young person's chances for success by reliably and efficiently promoting essential competencies. Schooling can make a difference (Smith and Orlosky, 1975), and competency based education represents an approach to schooling that offers the promise of clarifying and enlarging that difference.

Fostering Independence In Learning, And A Commitment To The Value Of Learning Throughout One's Life

Some of the major benefits that may emerge from a competency based approach to education -- and some would argue the most important benefits of all -- are indirect. These are the benefits of learning how to learn; learning how to define what is important to be learned; and experiencing the lasting satisfaction that comes with having learned something that is deemed important.

It is assumed that a continuing opportunity to help define and negotiate what is to be learned, a continuing opportunity to define and negotiate the learning activities to be purused, and a continuing opportunity to identify and assess performance in relation to what is to be learned will provide well established habits of learning. Participation in such an approach to schooling, and the achievement that goes with it, should enhance satisfaction with schooling and maximize one's commitment to learning throughout life.

CHAPTER 5. OPTIONS TO BE CONSIDERED IN THE DESIGN OF COMPETENCY BASED EDUCATIONAL PROGRAMS

The design of a competency based educational program for a particular district, or for a particular school within a district, requires a set of decisions not yet considered. These are decisions about content, for the proposed defining and enabling characteristics of a competency based approach to education make no reference to content. Other than indicating that a proportion of the outcomes to be pursued by students are to reflect the ability to function effectively in out-of-school contexts, and that some of these in turn are to be demonstrated in order to graduate, the characteristics say nothing about what these outcomes are to be, what form indicators of outcome achievement are to take, or what the standards of performance are to be. Nor do they speak to the materials and procedures to be used in translating content into operational programs.

In short, the definition of competency based education that has been proposed is for all intents and purposes a process definition, leaving decisions about the content of education -- and the materials and procedures used to convey content -- strictly in the hands of implementing schools.

Decisions about content of course have major implications for what happens in schools. They also have major implications for the cost of schooling, and for the difference schools are likely to make in the lives of children and youth. By all counts decisions about content are as important as decisions about process, and communities that wish to implement a competency based approach to education must arrive at such decisions for <u>each</u> of the defining and enabling characteristics that has been discussed. The purpose of this chapter is to draw attention to this fact, and to illustrate the kinds of content related decisions that must be made if

a competency based program is to be implemented. Since content decisions relative to the enabling characteristics of a competency based program will depend on decisions made about defining characteristics, illustrative decision options are provided only for the defining characteristics of CBE programs.

Outcomes To Be Achieved

Central to the implementation of any competency based program are the outcomes to be achieved through schooling. A competency based program starts with the outcomes to be achieved, and ends with evidence of how well they have been achieved. It takes as a first principle of operation the assumption that the outcomes specified are appropriate and meaningful, and that students achieving these outcomes will be well equipped to function in contemporary society. To the extent that this principle is violated, or in any way diminished in its effectiveness, the power of competency based education to make a difference in the education of children and youth is also diminished.

One way to increase the likelihood that the outcomes desired of schooling are appropriate and meaningful is to insist they be established only after a careful analysis of the nature of the society that graduates of educational programs will be entering, both present and anticipated and an equally careful analysis of human development and learning. By considering this information in conjunction with the knowledge that has accumulated within the disciplines the appropriateness and meaningfulness of goals established for a school system should be enhanced considerably.

As with all other aspects of a competency based educational program, the matter of outcome identification as well as the analysis of what is

known about development and learning, is a continual process. The outcomes selected as a point of departure in such a program need to be reviewed periodically to be sure they continue to be appropriate. The questions listed in Table 9 are suggestive of the options available to a community in identifying the outcomes desired from its schools.

Outcome Evaluation And Certification

As indicated in Chapter 4 (see pp 69 to 72), once desired learning outcomes have been established, a critical next step in the design of competency based programsis to determine how these outcomes are to be evaluated, and how students are to be certified as having met or not met the outcomes required for graduation. This is the aspect of schooling that probably is changed most under a competency based approach to education, for typically outcome measurement is a process not well attended to in schools. In CBE it is central. It is in a sense the heart of CBE, for instruction in a competency based program, as well as graduation and certification, is linked directly to outcome measurement. So are the processes of resource allocation, program adaptation, and the wherewithall to give meaning to the concept of school accountability. Of equal importance is the fact that the stance a district takes with respect to evaluation and certification has major impact on the level of complexity introduced to the operation of schools, and the resources required for their operation.

For all these reasons the decisions reached by an implementing district about outcome evaluation and certification are of critical importance.

Table 9. Questions To Be Considered In Identifying The Outcomes To Be Achieved By A School System

District Level Outcomes

How broad or narrow are these to be? For example, are they to reflect the learning outcomes expected from each of the various instructional programs offered by a district, or are they to cross-cut programs? Are they to be tied to subject matter areas, or are they to be essentially philosophic in nature? How many district level outcomes are there to be? Ten? Twenty? Fifty?

What kinds of outcomes will be emphasized? Will they focus on knowledge and the basic skills of reading, writing, speaking and computation? Will they focus on physical skills? Mental health? Attitudes and values? What life-roles will be looked to as a basis for identifying the competencies to be demonstrated for purposes of graduation?

Are outcomes at the district level to be measured? If so, is a particular level of achievement in relation to these outcomes to be required for graduation?

If district level outcomes are not to be assessed, are they to be inferred from program level outcomes?

Building Or Program Level Outcomes

How broad or narrow are these to be? For example, are they to be the "terminal" outcomes expected from a particular program of study, or are they to be a set of outcomes achieved at various stages in the process of schooling? How will these outcomes differ from district level outcomes? How will they relate to them?

What kinds of outcomes will be emphasized? Will these also focus on knowledge and basic skills? On physical skills? On attitudes, values, and psychological well being? Will building or program level outcomes be treated as "competencies to be demonstrated for purposes of graduation"?

Are outcomes at the building or program level to be measured? If so, is a particular level of achievement in relation to these outcomes to be required?

If program level outcomes are not to be assessed, are they to be inferred from the achievement of course level outcomes?

Course Level Outcomes

How broad or narrow are these outcomes to be?

What kinds of outcomes will be emphasized?

Are outcomes at the class or course level to be measured? If so is a certain level of achievement in relation to these outcomes to be required?

How are class or course level outcomes to be related to program level outcomes? To district level outcomes?

If course level outcomes are not to be assessed, are they to be inferred from the achievement of individual students in a course?

Will course level outcomes be treated as "competencies to be demonstrated for purposes of graduation"? (or the reverse, can competencies required for graduation be demonstrated through the achievement of course level outcomes?)

Individual Student Outcomes

Is each student to meet all "required outcomes"?

How long may a student take to complete required outcomes?

Are there limits to the number and kind of "elective" outcomes that a student may pursue?

Are required and elective outcomes to be found only in the context of courses?

If required or elective outcomes are to be pursued outside of courses what are the nature of these outcomes?

The design of the evaluation-certification process within a competency based approach to education involves five separate steps:

1. Identifying indicators to be used as evidence of outcome achievement;

2. Identifying the measures to be used in obtaining evidence of outcome achievement;

3. Identifying the level of performance on a particular measure (the "performance standard") that will be accepted as evidence of outcome achievement;

4. Identifying the procedures to be followed in judging whether performance meets the standards that have been set; and

5. Identifying how a school is to certify that a student has or has not met an acceptable level of achievement, and how that level of achievement is to be displayed in relation to standards.

These five steps obviously are interdependent, and decisions made in relation to one will affect decisions made in relation to another. Moreover, some decisions have to be made before others. For example, identifying indicators to be looked to as evidence of outcome achievement can and probably should occur at the time outcomes are identified, but establishing standards for performance can occur only after measures have been selected for the assessment of performance since performance standards depend directly upon the measures of performance used. Given this kind of interdependence, and the fact that it is not possible to arrive at decisions about all five items at the same time, questions that need to be considered when reaching decisions about each item have been prepared separately. These appear in Tables 10 through 14. As in the case of the questions listed in Table 9, the questions that appear in Tables 10 through 14 are intended to be illustrative only; they are not exhaustive, and they are not intended to reflect the constraints of local circumstance.

Table 10. Questions To Be Considered In Identifying Indicators Of Outcome Achievement

District Level Outcomes
If district level outcomes are to be evaluated, is performance on standardized achievement measures to be used as evidence of outcome achievement?
Are measures of students' performance in relation to course or program outcomes to be used as evidence of outcome achievement at the district level?
Are judgments of a student's peers, parents or members of a "community evaluation team" to be used as evidence of the achievement at the district level?
Are some or all district level outcomes to be treated as "competencies required for graduation"? Do indicators of outcome achievement assume different properties for outcomes required for graduation than for outcomes not required for graduation?
Building Or Program Level Outcomes
If building or program level outcomes are to be evaluated is performance on standardized achievement measures to be used as evidence of outcome achievement?
Are measures of student performance in relation to course level outcomes to be accepted as evidence of outcome achievement at the building or program level?
Will a special set of measures be developed and used as evidence of outcome achievement at the building or program level?
Are judgments of a student's peers, parents or members of a community evaluation team to be used as evidence of outcome achievement at the building or program level?
Are some program level outcomes to be treated as competencies required for graduation? Do indicators of outcome achievement assume different properties for outcomes required for graduation than for outcomes not required for graduation?
Course Level Outcomes
Will teacher made tests be accepted as evidence of outcome achievement at the class or course level? Will teacher judgment, based on a review of work done or products produced, be accepted as evidence at this level? Will peer judgment, based on participation in work activities or a review of products produced? Will judgments of a student's parents or members of a community evaluation team?
If some course level outcomes to be treated as competencies required for graduation, do indicators of outcome achievement assume different properties for outcomes required for graduation than for outcomes not required for graduation?
Individual Student Outcomes
Will teacher judgment, based on a review of work done or products produced, be accepted as evidence of outcome achievement for individual students? Will peer judgment, based on participation in work activities or a review of products produced, be accepted? Will judgments of a student's parents or members of a community evaluation team?

Table 11. Questions To Be Considered In Selecting Measures Of Outcome Achievement

District Level Outcomes
If some district level outcomes are to be assessed through use of standardized achievement tests, what tests specifically are to be used?
If measures of student performance in relation to program outcomes are to be used as evidence of achievement at this level, what measures specifically are to be used?
If peer or parent judgments, or the judgments of a community evaluation team are to be used as evidence of outcome achievement, what form are these judgments to take? Ratings? Observational records? Evaluation of products produced?
Building Or Program Level Outcomes
If some program level outcomes are to be assessed through use of standardized achievement tests, what tests specifically are to be used?
If special measures are to be developed for assessing building or program level outcomes, what form will such measures take? Will they be "criterion-referenced" measures? Will they be "domain-referenced" measures? Will they be terminal measures, that is, outcomes assessed only at the completion of the program, or will they be measures of outcomes demonstrated throughout the program?
If peer or parent judgments, or the judgments of a community evaluation team are to be used as evidence of program level outcome achievement, what form will these judgments take? Ratings? Observational records? Evaluations of products produced?
Course Level Outcomes
If teacher made tests are to be used as evidence of outcome achievement at the course level, what kind of teacher made tests should be encouraged? Also, should they be treated as "mid-term" or "final" examinations, or should they be designed to assess performance in relation to a particular outcome whenever a student or group of students wishes to be evaluated in relation to that outcome?
If teacher judgment in relation to products produced by students is to be used as evidence of outcome achievement at the course level, are these judgments to be in the form of ratings? Will there be a description of the strengths and weaknesses of the product, accompanied by an evaluative judgment such as a letter grade or pass-fail grade?
If special measures are to be developed for assessing course level outcomes, what form will such measures take? Will they be criterion-referenced measures? Norm-referenced measures? Domain-referenced measures?
If a student's peers, or someone else from the community, is to judge a student's products as evidence of outcome achievement, what form should their judgments take?
If teacher or peer judgments are sought about performance outside the context of formal tests and product reviews, what form should such judgments take? And what evidence should be collected in support of such judgments? Should judgments take the form of ratings or letter grades, and be supported by video tapes or observation records? Would the pooled judgments of two or three independent observers about the quality of performance be accepted?
If individual student outcomes are to be combined and analyzed for purposes of determining course level outcomes, how is this to be done?
Individual Student Outcomes
(All of the questions asked in relation to course level outcomes apply to the assessment of individual student outcomes)

Table 12. Questions To Be Considered In Setting Performance Standards

District Level Outcomes
If district level outcomes are to be assessed by means of standardized achievement tests, what norms are to be used in establishing the level of performance desired on the part of students in the district? How is the desired level of performance to be established?
If district level outcomes are to be measured in terms of performance in relation to building or program level outcomes, how are performance standards to be established? Are they to be established in terms of the performance of students in the district who have completed a program of study? Are they to be established without any reference to student's actual performance within a program of study? What difference would it make to such decisions if program level outcomes were assessed by means of criterion or domain-referenced tests instead of norm-referenced tests?
If evidence of outcome achievement is to be in the form of judgments about performance or products, are performance standards to be in the form of a particular rating or grade, for example, a rating of 3 on a 5-point scale, or a grade of C on a scale of A to F? Do performance standards that involve judgments require statements about the number of times a student's performance is to be observed, and under what conditions, or the number and kinds of products to be reviewed?
Building Or Program Level Outcomes
(All of the questions asked in relation to performance standards for district level outcomes apply to the issue of performance standards for building or program level outcomes, though "program level" outcomes need to be substituted for "district level" outcomes where appropriate.)
Course Level Outcomes
Are performance standards for outcomes expected from a particular course to be criterion-referenced or norm-referenced? If they are to be criterion-referenced, how are these standards to be established? And do they apply to all students within a course, or only to students who can meet such standards within a reasonable period of time and with a reasonable allocation of resources? If performance standards for course level outcomes are to be norm-referenced, how are the standards to be established?
If judgments by teachers or peers about performance or products are to be used as evidence of outcome achievement, are performance standards to be in the form of a particular rating or grade? Do performance standards at the course level that involve judgments require statements about the number of times a student's performance is to be observed, and under what conditions, or the number and kinds of products to be reviewed?
Individual Student Outcomes
If teacher made tests are accepted as evidence of outcome achievement for individual students, how are performance standards for these tests to be established? Is an expected performance level to be set without reference to actual performance on the tests involved, or are performance standards to be established in light of student performance on the test? (This is not to be confused with assigning norm-referenced standards; it deals, rather, with being sure that the performance standards set are realistic, given the ability and background of students, the time available for instruction, the availability of instructional resources, etc.)
If judgments of a student's work or a student's products are to be taken as evidence of outcome achievement, what form should performance standards take?
If judgments by teachers or peers about performance or products are to be used as evidence of outcome achievement for individual students, are performance standards to be in the form of a particular rating or grade? Do performance standards involving judgments require statements about the number of times a student's performance is to be observed, and under what conditions, or the number and kinds of products to be reviewed?

Table 13. Questions To Be Considered In Evaluating Student Performance In Relation To Standards

District Level Outcomes

If district level outcomes are to be measured, how is performance in relation to these outcomes to be evaluated in terms of the standards that have been set for them? Is this to be done by district personnel and reported to parents and teachers? Is it to be done by building level personnel, in conjunction with parents and students, and reported to the school board and community at large? Is it to be done by persons responsible for the administration of instructional programs within the district, and reported to appropriate school authorities? Some combination of these?

Building Or Program Level Outcomes

If building or program level outcomes are to be measured, how is performance in relation to these outcomes to be evaluated in terms of the standards that have been set for them? Is this to be done by district personnel and reported to parents and teachers? Is it to be done by teachers or aides and reported to the school board and community at large? Is it to be done by parents and students? Is it to be done by persons responsible for the administration of instructional programs within the building, and reported to appropriate school authorities? Is it to be done by teachers responsible for instruction that occurs within programs, and reported to appropriate district personnel? Some combination of these?

Course Level Outcomes

If course level outcomes are measured, how is performance in relation to these outcomes to be evaluated in terms of the standards that have been set for them? Is this to be done by district personnel and reported to parents and teachers? Is it to be done by teachers or aides and reported to the district at large? By individual students, in conjunction with parents and members of the community at large? Is it to be done by persons responsible for the administration of the instructional program within which a course rests, and reported to appropriate school authorities? Is it to be done by the teacher responsible for instruction within a particular course, with reports going to parents, principals and other appropriate school officials? Some combination of these?

Individual Student Level Outcomes

How is an individual student's performance in relation to the standards set for a particular outcome to be evaluated? By his or her advisor? By the instructor responsible for facilitating the development of a particular learning outcome? A jury of peers? A jury composed of a peer, a teacher and a member of the community? Some combination of these?

How should the procedures used in evaluating performance in relation to standards vary for outcomes to be demonstrated for graduation as opposed to outcomes not required for graduation? How should they vary for outcomes relating to "competencies" as opposed to outcomes that function as "enablers" of competence (e.g., knowledge and skills)?

Table 14. Questions To Be Considered In Certifying Outcome Achievement

Outcomes Required For Graduation
Will numerical ratings that correspond to performance in relation to standards set for each outcome to be demonstrated -- where the numerical rating reflects less than acceptable performance, acceptable performance, or outstanding performance -- be used? Will a simple pass-fail or acceptable-non-acceptable description of performance in relation to each outcome to be demonstrated be used? Will there be some written description that summarizes performance in relation to standards set for each outcome to be demonstrated? Will one of the above translate into a "profile" of performance across all outcomes to be demonstrated for graduation? Will one of the above be accompanied by a portfolio of work and performance evaluations for each outcome to be demonstrated?
Should certification and performance display procedures vary for "competencies" to be demonstrated and "capacities" to be mastered?
Outcomes Not Required For Graduation
Should the same procedures used for certifying the achievement of required outcomes be used to certify the achievement of outcomes not required for graduation? If not what procedures, if any, should be used? Would simply listing the non-required outcomes that have in fact been demonstrated be sufficient? Would listing as schools do now the various learning experiences (courses) that students have taken as a means of achieving required outcomes be sufficient? (It is possible, of course, to deal only with performance in relation to required outcomes in the certification process. While logically consistent with the philosophy of competency based education, this would lead to a loss of considerable information that could be of value to the graduate as well as others.)

The Design And Operation Of Instructional Programs

Historically, instruction in schools has tended to be organized around subject matter rather than well defined outcomes desired from the educational process. While competency based education is in no way anti-subject matter in its orientation, it does require that instruction be organized primarily in relation to outcomes rather than disciplines or some other organizing framework. To the extent that desired outcomes are tied specifically to a discipline, of course, instruction within a competency based program would be organized around the discipline.

Fortunately, a good deal has been learned during the past half decade about the organization and operation of instructional programs for purposes of targeted outcome achievement. The experience of competency based teacher education with modularized instruction, and the experience gained in mastery learning programs at the elementary and secondary level, have provided a wide base of experience in this regard. So too have the long histories of work in programmed instruction and the development of specific skills within military and industrial settings (Crowder, 1959; Glaser, 1962; Morsh, 1962). Surprisingly, instruction in relation to the development of ability (competence) in job or life roles outside of a school context also has a long history, though it often goes unnoticed. This history draws heavily on the concept of supervision within the context of professional preparation programs and industry. Collectively, these various histories of experience with instruction toward targeted outcomes provide a rich base for planning instruction within the context of competency based elementary and secondary programs.

Independent of the various structures and procedures employed in competency based instruction, and independent of the subject matter area within which instruction occurs, competency based instructional programs will always have three defining characteristics:

- Both content and process are clearly linked to the outcomes desired;
- Clearly identifiable alternative learning experiences are provided for each outcome to be achieved; and
- Performance in relation to established standards is clearly relied upon as a basis for program placement decisions, including program exit and certification decisions.

Some of the options that adopting districts have in relation to these three features of competency based instruction are highlighted by the questions posed in Table 15.

Table 15. Options To Be Considered In Reaching Decisions About The Design And Operation Of Competency-Based Instructional Programs

The Linkage Of Content And Process To Outcomes Desired
Is instruction to be "modularized" -- that is, divided into well defined units of instruction that take their focus and organization from the particular outcomes to be achieved? If so, are the instructional modules to be "packaged" so that students may work through them at their own leisure? Are instructional modules to be thought of more broadly than individual learning packets, and have included in them some lecture and small group learning activities? Will the concept of modularized instruction apply to instruction for purposes of competency acquisition and demonstration, or will a different view of instruction have to emerge to accommodate the demands of competency acquisition? Will the concept of modularized instruction apply to the achievement of outcomes that are primarily attitudinal or social in nature?
If competency based instruction is not organized within the framework of modules, how is it to be organized? Are courses still an appropriate unit of organization for instruction? Are individual instructors? Are teams of instructors? What are the implications of CBE for the organization and use of instructional resource centers? What are the implications of CBE for the organization and use of textbooks and published curricular material?
Apart from the organizational implications of competency based education, what are its implications for instructional strategies or methods? Are some kinds of outcomes acquired better through use of particular instructional strategies or methods? Are some strategies and methods effective in relation to a particular outcome for some children, but not for others? What do we need to know about outcome-aptitude-treatment interactions that we do not presently know?
The Availability Of Alternative Learning Experiences For The Achievement Of Outcomes
How many alternative learning experiences should be available for the achievement of a particular outcome, and how should these experiences differ? For example, should there be at least two learning options, each of which makes use of quite different kinds of learning experiences? Should there be a range of options available for both gifted and non-gifted children, as well as children who will require more time and effort to achieve the outcomes desired? Should alternative learning outcomes be tailored to fit children who have "preferred" learning styles? To what extent should alternative learning experiences reflect the interests and preferences of instructors rather than students?
A Reliance On Performance In Relation To Standards As A Basis For Program Placement Decisions
Should there be the requirement that students engage in learning experiences oriented to the achievement of a particular outcome only after evidence has been obtained as to a student's standing with respect to that outcome? (The matter of pre-assessment, and program placement on the basis of pre-assessment data.)
Should evidence of a student's progress toward the achievement of a particular outcome be collected systematically during the course of instruction, and used as a basis for planning next steps in the instruction-learning process? If so, how frequently should such information be obtained? What measures of progress in relation to outcome achievement should be used? Should progress measured be reported? How should such information be reported to students? What is the student's responsibility for acting upon such information?
Should students be required to demonstrate mastery of a particular outcome before working on other outcomes that are assumed to depend on its achievement? How many outcomes should a student be permitted to work toward at any one time? How long should a student be permitted to work on any particular outcome, and how many times should a student be permitted to challenge an outcome without demonstrating mastery?

Table 15 (Continued)

Are all outcomes required for graduation to be achieved before a student can graduate? What would happen if all but one or two required outcomes were able to be demonstrated, and additional instruction seemed to make no difference in terms of the mastery of the one or two outcomes uncompleted?
Are the standards set for outcome achievement never to be modified to accommodate individual learner circumstance, or will the realities of settings and individual characteristics be allowed to enter decisions about outcome mastery?
To what extent will outstanding performance in relation to outcomes desired, as well as poor performance, be recognized in the certification process? Will certification and the description of performance in relation to standards be designed to provide as much information as reasonably possible about the strengths and abilities of indiviudal students, or will it be designed to indicate only that a student has met or not met graduation requirements?

Personalizing The Instruction-Learning Process

As discussed in Chapters 3 and 4, the press to personalize the instruction-learning process comes from two sources. The first is philosophic; the second is pragmatic. Philosophically, instruction and the outcomes to be achieved through instruction, should be adapted to meet individual differences in learners. Pragmatically, they must be. Within a mastery learning approach to education learners must have both access to alternative means of achieving desired outcomes and varying amounts of time for their achievement. Within a competency based approach to education, where a portion of desired learning outcomes assume the form of ability to function in life role settings, there must also be opportunity to adapt outcomes to fit individual differences and circumstances. As Schalock has pointed out elsewhere (1974), so long as the outcomes of schooling are defined primarily in terms of the mastery of knowledge the personalization of instruction and assessment -- with the exception of having to provide alternative learning experiences and varying amounts

of time - is optional. As outcomes become more complex, however, and demanding of performance in job or life role situations, the instruction-learning process must of necessity become more personal and idiosyncratic in its operation. This dilemma, even at the point of graduation-certification decisions, is pointed up by the last set of questions that appear in Table 15.

Given the requirement that competency based education be personalized, how is its personalization ot occur? The options program designers face in this regard are essentially endless, but the questions raised in Table 16 are at least suggestive of ways to proceed.

Improving The Instruction-Learning Process

As indicated repeatedly, a dominant feature of competency based education is its incorporation of systems principles as a basis for program improvement. The elements involved in such an approach have been described in considerable detail on pp 77 to 79. In implementing systematic procedures for program improvement, however, formative and summative evaluation studies assume a critical role. At least four kinds of evaluation data are useful in undertaking program improvement efforts: (a) data on the acceptability of program practices and procedures to program participants; (b) data on the performance of staff within the program; (c) data on the costs and benefits associated with the program, including the achievement of learning outcomes desired from the program; and (d) data from research studies designed to determine the long-term effects of the program. Some of the options available to school districts in obtaining such information are suggested by the questions listed in Table 17.

Table 16. Questions To Be Considered In Personalizing The Instruction-Learning Process

Outcomes Required For Graduation
To what extent will students be able to negotiate the outcomes required for graduation? Are these to be fixed by the district, with all students having to demonstrate mastery of the same set of outcomes, or will students be permitted to pursue at least some outcomes that are of their own choosing? Should the district require no specific outcomes, but indicate that appropriate outcomes must be established and demonstrated by each student in order to graduate? Some combination of these? For example, a set of outcomes that are non-negotiable and a set that are negotiable?
Are indicators of outcome achievement to be open to negotiation? For all outcomes required for graduation? Only for outcomes that students are able to negotiate? Are indicators of outcome achievement to be established by a district, but students permitted to negotiate which of the accepted set of indicators they wish to use?
Are the measures to be used in assessing outcome achievement to be negotiable? Are they to be fixed? Or will students be able to negotiate only within an "accepted set" of measures adopted for the assessment of particular outcomes? Some combination of these? Will this in part depend on the indicators and measures of outcome achievement to be used?
To what extent will the standards set for performance in relation to a particular outcome be negotiable? Will this in part depend on the indicators and measures of outcome achievement to be used? If standards are to be negotiated, what meaning does the concept of performance standards have? If performance standards cannot be negotiated, what meaning does the concept of a personalized approach to education have?
To what extent are the learning activities to be purused while working toward the achievement of a particular outcome to be personalized? To what extent will the environments within which outcome achievement is pursued be personalized? For example, is learning to be confined to a particular classroom? A classroom, a library and a learning resource center? A number of classrooms within a particular school? Or can it be extended, through negotiation, to a number of schools? A school and a community college? A school and a community-at-large?
To what extent will time be free to vary in the instructional process? Are time limitations to be placed on the achievement of particular outcomes -- for example, a week, a month or a year? Are time constraints to be put on some outcomes and not others? Within whatever time constraints that exist, will there be limits placed on the number of outcome demonstration attempts permitted without penality? For example, can a student attempt to demonstrate mastery of a particular outcome three times without penalty, Twice? Five times? Does the number of demonstration attempts allowed interact with the length of time permitted for a competency demonstration? Does the number of demonstration attempts vary with the ability of the students involved? With the nature of the outcome to be demonstrated? What is the maximum number of demonstration attempts feasible in terms of the time and resources available before students must be required either to redefine the outcome being worked toward or renegotiate the performance standards that have been set for outcome achievement?
Outcomes Not Required For Graduation
To what extent will the instruction-learning process be personalized in relation to outcomes not required for graduation? Will it be greater than for required outcomes? Will it be less? Will it depend on the nature of the outcomes being worked toward? To what extent does this set of decisions interact with decisions made about performance standards and evidence of outcome achievement for non-required outcomes? To what extent do such decisions interact with resource availability and philosophic commitments?

Table 17. Questions To Be Considered In Improving The Instruction-Learning Process

Formative And Summative Evaluation Of Program Operations, Including The Reaction Of Participants To The Program
To what extent are formative evaluation studies to be incorporated as an ongoing aspect of the program? What is the nature of the formative evaluation design? What aspects of the program are to be evaluated? What provisions are there for data from formative evaluation studies to enter program adjustment decisions? Who in the school setting is to collect such information? How wide a range of program participants is to be included in the evaluation design? What proportion of program participants is to be included in the evaluation sample? Who is to summarize such information and ready it for use by decision makers?
Formative And Summative Evaluation Of The Performance Of Staff Within The Program.
To what extent is the performance of staff to be evaluated? What will be attended to in the evaluation of staff performance? For example, will evidence of outcome achievement on the part of students be considered? How is evidence on staff performance to be obtained, and who is to obtain it? What uses are to be made of evidence about staff performance? Who is to see the information collected about staff performance?
Summative Evaluation Of The Costs And Benefits Associated With Program Operation, Including Learning Outcomes Achieved
Will evidence on the costs associated with program operation be systematically collected? If so, what aspects of the program are to be costed, and what categories of cost are to be reported? In addition to learning outcomes achieved, how are program benefits to be defined? Who is to collect evidence on costs and benefits? How is such evidence to be used in decision making about the program? Who is to see the cost and benefit information collected?
Research On Long Term Program Effects
Is a program of research on the long term effects of the program to be undertaken? If it is, how should the follow-up study be designed? How should long term effects be defined and measured? How large should the sample of graduates be for the follow-up study? How long should graduates be followed? Who should do such a study? How are the results of such a study to be used in making decisions about the program? Who is to see the results of such a study?

Additional Sources Of Variation Within Competency Based Programs That Impact The Nature And Cost Of Schooling

A host of decisions must be made about content and procedure beyond those listed in Tables 9 through 17. Some deal with decisions pertaining to the enabling characteristics of CBE programs, for example, decisions about management and governance structures. Others deal with more mundane matters, for example, the ratio of students to teachers, efficiency in the instructional process, quality and background of faculty, and access to materials and space. All such matters are well known to school administrators and members of school boards, and all depend to a large extent upon decisions made with respect to the defining characteristics of CBE programs, so more need not be said about them. All affect the nature and cost of schooling, however, and must be dealt with as carefully and as systematically as the decisions that have been highlighted in the previous pages.

Because of the particular characteristics of competency based programs, a number of issues that school administrators and boards of education tend to deal with routinely, or have not had to deal with in the past, take on new meaning. Three of these are

- A district's orientation to exceptional children;
- A district's orientation to the use of technology as an aid to the process of schooling; and
- A district's orientation to research on the effectiveness of schooling.

Each of these issues is discussed briefly in the paragraphs that follow.

A District's Orientation To Exceptional Children

As indicated in Chapter 4, and again in Table 15, exceptional children pose somewhat of a dilemma for the designers of competency based educational

programs. Are competencies and other outcomes required for graduation to be designed to accommodate all children, independent of learning ability, or should they be geared to accommodate children having at least average ability? If outcomes required for graduation are such that they cannot be met by some children, how are these children to be accommodated within the program? How do CBE programs accommodate the gifted? These are questions that must be dealt with in every educational program, but because of the special features of a competency based approach to education they are particularly vexing.

With the passage of Public Law 94-142, with its press for handicapped learners to be included as much as possible in regular classroom instruction (the concept of "mainstreaming"), these questions take on added meaning. In many respects competency based programs are ideal contexts within which to mix learners of all abilities for a mastery approach to instruction and the personalization of the instruction-evaluation process are designed to accommodate great differences in learners. The management and resource demands that accompany the adaptation of a competency based instructional program to wide differences in learners, however, are great and those who opt for such an approach to schooling should be aware of them.

The Orientation Of A District To The Use Of Technology

Many of the educational innovations that have contributed to the emergence of competency based education make heavy use of technology. These include programmed instruction, computer managed instruction, computer based instruction, and computer based scheduling of instruction, as well as the long established use of educational media and "packaged" instructional programs. The emphasis within competency based education on

instruction that links to outcomes, on the assessment of outcomes, and on the use of information on outcome achievement for purposes of management and governance decisions invites the continued use of technology in the operation of such programs. The orientation a district has with respect to the use of technology, as well as the expertise that is available in its use, is a major factor to be considered in the design of any competency based program.

A District's Orientation To Research On The Effect Of Schooling

It has been argued recently (Schalock, 1974, 1975) that competency based education and competency based teacher education programs are unusually rich contexts for research. The argument rests on the assumption that one of the most promising features of the competency based movement is its potential for overcoming many of the measurement problems that have plagued educational research over the years, and for providing better defined and more powerful treatment conditions than educational researchers have had access to in the past. An equally critical assumption is that if these contributions are of the kind and quality anticipated, and if the research community recognizes them as such and takes advantage of their availability, both applied and basic research can be carried out within the context of competency based programs at low cost and with high external validity.

Schalock goes on to point out, however, that while it is possible to combine research with program operation, considerable risk is involved in attempting such a venture. High quality measures, for example, are often difficult and costly to obtain. Also, requiring that program operations meet the constraints of experimental design tends to create a cumbersomeness and rigidity of program operation that frustrates both program

managers and participants. Heretofore, efforts to design data collection systems that support both program operation and research have tended to end in the design of research programs instead of operational programs that have good data. When this has occurred there has been a nearly universal reaction on the part of program managers and participants: throw the researchers out! (Parlett and Hamilton, 1972).

Recognizing this pitfall, it is still possible that if done with care data generation systems can be designed that will support both program operation and research. When this is the case, the best possible context for basic research exists: it can be carried out at low cost and it has a good chance of meeting the requirements of external validity that are not met in most educational experiments (Schulman, 1970).

While the issue of research on the effectiveness of schooling is foreign to most school boards and administrators, it is an issue that looms large in implementing competency based education programs. Not only do such programs for the first time provide opportunity for education moving to an empirically based mode of operation, but they provide the means by which educational programs can be systematically improved as well. For these reasons, all designers of competency based programs need to consider the extent to which a program is to serve as a context for research. If the decision is to have the program become such a context, there are implications that stretch throughout essentially every facet of program operation.

CHAPTER 6. PATTERNS AND CONTEXTS: PROGRAM VARIATIONS THAT ACCOMMODATE DIFFERENCES IN SCHOOLS AND COMMUNITIES

Before implementing a competency based approach to education a school or district must settle upon the particular set of defining and enabling characteristics its program is to reflect. In most cases these will represent a complex set of "trade-off" decisions that reflect a compromise between what is desired and what is possible, what is liked, and what is not liked. Philosophic commitments and political pressures will enter the decision making process in this regard, as will financial considerations, staffing considerations, and the nature of programs that already exist. Program options will be selected on the basis of all such considerations, and if the selection process is treated with care and consideration, a set of options will be selected that will combine to form a program that is functional, internally consistent, and accommodating of the particular desires and circumstances of the adopting school or district.

Chapter 5 spelled out some of the options available to adopting districts when considering these decisions. The present chapter provides examples of how various sets of options can go together to make up competency based programs that reflect different points of emphasis, commitment and resource availability, but at the same time are internally consistent and potentially functional. In keeping with the title of the paper these are treated as "alternative models" of competency based education.

Six different models of competency based education are described in the pages that follow. They vary from the relatively simple to the relatively complex. All, however, reflect acceptable variations of the definition of competency based education put forth in Chapter 3, and thus represent relatively complex approaches to schooling. The distinguishing

characteristics of each model are "mapped" against the dimensions of choice outlined in Figure 7, p 64, and a label provided that reflects these characteristics. Each model also is accompanied by a discussion of the conditions necessary for its implementation and the developmental tasks, costs and benefits, and the liabilities and limitations that are likely to accompany its implementation. These, of course, are only projections, but they do reflect the experience of implementing competency based teacher education programs that reflect many of the same characteristics as outlined in the models. They also reflect the experience gained thus far by school districts in Oregon attempting to implement such programs. In time the research that is planned as an accompanyment to the Oregon experience in competency based education will provide better estimates than those provided here, but until that time the estimates made should be of some assistance to persons contemplating the implementation of programs that resemble those outlined.

Notes On The Concept Of Model In The Context Of Education

Educators use the term model in a variety of ways. Sometimes it is used to refer to something that is exemplary or illustrative, for example, a program in early childhood education or career education that should be viewed as a model for others to follow. Sometimes it is used to refer to a miniaturized version of something, for example, a model of a school building that is about to be built. Sometimes, however, the term is used to refer to an abstraction or representation of something that is complex or otherwise not easily understood. In this context the term refers to "...a well developed descriptive analogy used to help visualize, often in a simplified or miniature way, a projection of a possible system

of relationships (emphasis added) among phenomena, realized in verbal, material, graphic or symbolic terms" (Snow, 1974, p 81). Following this use of the term a model of competency based education is viewed as a well defined and functionally different pattern of emphasis or interpretation that can be given the defining and enabling characteristics of competency based education, as these have been elaborated in the preceding chapters.

By defining a model in this way it is possible to establish an essentially endless number of models of competency based education. Taken by themselves the defining and enabling characteristics of a competency based program can be combined in hundreds of different ways. When these various possibilities are combined with the options that exist around each defining and enabling characteristic, the model variations that become possible are for all intents and purposes unending. In some respects this constitutes an advantage, for the model variations possible approach the variations that exist in different communities and schools that need to be served by such models. In some respects, however, it constitutes a disadvantage, for it implies that each district that wishes to implement a competency based education program must develop its own model.

A middle ground exists, and it emerges through the idea of "model-based" programs. The essence of the idea is that a model of competency based education can serve to foster or give focus to a wide range of program variations, and still have each program reflect the essential characteristics of the model from which the program was derived. Functionally this has two advantages: fewer basic models need to be developed, and schools that have derived their programs from a particular model recognize immediately that they have a great deal in common. This permits each to benefit from what has been learned by the other, and yet be

free to implement the particular model variation that accommodates best their own needs and circumstances.

The models of competency based education that are described in the pages that follow reflect this point of view. Each is viewed as an appropriate variation of the possible combinations of the defining and enabling characteristics outlined in Chapter 3. In combination the six models are viewed as representing the full range of models possible from the point of view of the complexity-simplicity of such models, and the major dimensions along which CBE programs can vary. As such the six models outlined should serve as guides to program development for a wide variety of schools, in a wide variey of contexts. Other models, of course, are possible, for those that have been selected for description are arbitrary. The range of models described, however, should cover the range of program variations that schools are likely to implement.

Notes On The Concept Of "Partial Models" And "Approximate Programs" Of Competency Based Education

For purposes of the present paper, a partial model or an approximate program of competency based education is one that does not reflect all of the defining and enabling characteristics of competency based programs in clearly recognizable form. Since the development of alternative models of competency based education is largely a paper exercise, it is unlikely that partial models are likely to be proposed -- unless of course the model builder chooses to ignore one or more of the defining or enabling characteristics that have been proposed, or chooses to define competency based education in a different way. The implementation of competency based school programs, however, is a different matter. Here it is likely that most implementation efforts, at least in the beginning,

will be approximate programs, for it is unlikely that a school district will be able to implement a full fledged competency based program all at once. The magnitude of change is such that most districts will require at best a three- to five-year period to shift existing programs to a competency based mode of operation, and then it is likely that such programs will be operated in a manner that only approximates what is desired, or what may exist at a later point in time.

It is important that this be understood, and not only from the point of view of program cost. Equally important is the matter of time, for so many of the principles and practices of competency based education are sufficiently at odds with what now goes on in elementary and secondary schools, that considerable time must be allowed for students and faculty to internalize or act habitually on the basis of CBE principles and practices. A clear understanding of the time required for shifting from a traditional to a competency based mode of operation should lead to considerable tolerance for schools that only approximate a fully operational CBE program during the transition years.

Model 1. A Partially Individualized, Board-Referenced, Basic Skills Model

This is the most simple of the six models presented, and probably the one which most schools attempting to implement a competency based approach to education will adopt as a point of departure. As reflected in its label the model pertains to only a part of the school curriculum, for it takes as its focus the mastery of basic skills and the acquisition of knowledge that makes their mastery possible. It minimizes the individualization of instruction and the involvement of the community in the design and operation of the instructional program. The model represents in essence a "no nonsense", "no frills", approach to schooling. The model in full (Model IIB-e 7,8) is charted in Figure 8.

A PROGRAM CHARACTERISTIC ON WHICH THERE IS NO CHOICE

(POINT A)

A PERFORMANCE-BASED APPROACH TO INSTRUCTION/ASSESSMENT

THE INSTRUCTION/ASSESSMENT DIMENSION

	The "Individualization" Of The Instruction/Assessment Process		The "Personalization" Of The Instruction/Assessment Process	
	B	C	D	E
THE OUTCOME DIMENSION	A, plus alternative/ negotiable means by which to achieve desired outcomes	B, plus alternative/ negotiable time limits within which to achieve desired outcomes	C, plus alternative/ negotiable measures of outcome achievement	D, plus alternative/ negotiable outcomes to be achieved
I Mastery of knowledge				
II I, plus demonstration of skills				
III II, plus demonstration of attitudes, values and interpersonal orientations				
IV III, plus ability to function effectively in life roles				

THE PROGRAM INCLUSIVENESS DIMENSION

a. Selected outcomes/units within course(s) _____
b. One or more courses within a building _____
c. Sequences of courses or segments of programs within a building _____
d. Within building programs _____
e. Sequences of courses or segments of programs that cross-cut buildings _____
f. District wide programs _____
g. Total building curriculum _____
h. Total district curriculum _____

THE PROGRAM OPERATION DIMENSION

1. Student referenced (review, critique, evaluate) _____
2. Student assisted (advise, instruct, assess) _____
3. Community referenced (review, critique, evaluate) _____
4. Community assisted (advise, instruct, assess) _____
5. Short term program evaluation/improvement system _____
6. Long term program evaluation/improvement system _____
7. Outcome achievement a basis for program placement decisions _____
8. Outcome achievement a basis for graduation _____

Figure 8. A partially individualized board-referenced, basic skills model (Model IIB-e 7,8)

From Figure 8 it can be seen that Model 1 is simple in some respects, but not as simple as it might be. It is relatively complex, for example, in that it focuses upon both knowledge and skill acquisition across several programs, whereas a simpler model could focus only on the acquisition of knowledge in one or more courses. On the other hand, the model is as simple as it possibly can be with respect to the individualization of instruction and the operation of program, and still be treated as a model of competency based education. Time is not allowed to vary for skill acquisition, at least not beyond the limits it is allowed to vary in non-competency based programs, and program evaluation/improvement procedures are no more formalized than they are now in most educational programs. These omissions, in fact, will cause some to question whether Model 1 is in fact a competency based model, but the view taken here is that it is -- minimally.

Conditions Of Implementation

A number of conditions must exist within a school system for even this relatively simple model of competency based education to be implemented. These include

- Clarity as to the basic skills to be demonstrated in order to graduate;
- The availability of ways to assess the presence or absence of these skills, and clarity as to the level of achievement to be demonstrated with respect to them in order to graduate (the matter of performance standards);
- Instructional programs that facilitate their achievement, and that include in their design alternative learning experiences for their achievement;
- A record keeping system that enables students, teachers and parents to monitor progress toward their achievement, and use this information in arriving at program placement decisions;
- Remediation programs for students who do not obtain desired skill levels during the course of regular instruction;

- Program management and administrative structures that permit students, the resources of the school, and time to interact in such a way that each student in the school system has ample opportunity to achieve the outcomes desired; and

- Instructional, administrative, and support staff able to carry out the various functions required of them in order for all of the above to be accomplished.

These represent a relatively complex and tightly interdependent set of conditions, that must be in place for this relatively simple model of competency based education to be implemented. Some districts, of course, have most or all of these conditions well established; others have none. It is probably fair to say, however, that most districts have a great deal of developmental work to do before even this simplest of CBE models can be implemented in full.

Development Likely To Be Needed

Assuming that the basic skills to be demonstrated for graduation have been identified, and that instructional programs are reasonably well established for their achievement, a number of major developmental tasks in all probability still face a district before being able to implement a Model I based program. These are likely to include the development of procedures for measuring the acquisition of the desired skills, agreeing to the level of achievement to be demonstrated in relation to each skill in order to graduate (the matter of performance standards), the development of a record keeping system that permits the tracking of individual student progress on basic skill development, and the design of remediation experiences for students not able to achieve the desired level of basic skill achievement under regular instructional conditions. It is likely also that staff development programs will need to be designed and carried out in order to have instructional,

administrative and support personnel sufficiently familiar with the requirements of the model based program to permit it to function effectively.

Costs To Be Anticipated

Three kinds of costs can be anticipated in implementing any new educational program. These are costs associated with developing the program, costs associated with the actual operation of the program, and costs associated with the preparation of staff to operate the program. All three are likely to be involved in implementing a competency based education program that is based on Model I.

While it is likely that costs of this kind will be incurred, it is difficult to anticipate their precise nature and amount until the specifics of the program are determined, and the extent to which the program differs from the existing program can be established. Costs also will depend on the ability of staff within a school system to carry out program development activities, and to operate the program once it has been developed. In light of these limitations, it is possible to anticipate only generally the costs likely to be involved in implementing a program based on the particular model of competency based education that is outlined in Model I.

The major factor in determining cost of program implementation will be the decision made about approach to outcome assessment. If standardized measures of achievement are to be used in assessing basic skill acquisition, developmental costs will be minimal. If such measures are not to be used in assessing outcome achievement, however, and if an illustrative set of measures to be developed are not available for adaptation, the largest share of program development costs probably will go toward the development of such measures. The development of a district wide assessment program with respect to basic skill development is easily

as complex and time consuming as the development of a new K-12 instructional program, so time and resources need to be allocated accordingly.

As indicated above, to the extent that standardized measures are used in assessing outcome achievement, or illustrative criterion referenced assessment systems are available for adaptation, the cost of this task will be reduced appreciably. Even here, however, considerable time and energy will be consumed in tailoring an established assessment system to meet the particular needs of a district, given the particular outcomes to be demonstrated within a district for purposes of graduation. Additional time and energy will be required to reach agreement upon performance standards with respect to the various outcomes to be demonstrated, and in developing a recordkeeping system that permits the progress of each student to be monitored with respect to outcome acquisition and demonstration.

Curriculum and staff development tasks are likely to follow from what emerges by way of outcome measurement. On the curriculum side, for example, as outcomes to be achieved from a particular curriculum are sharpened curriculum revision tends to occur and provisions for remediation tend to be established. These developments in turn often lead to revisions in course scheduling and reassignment of personnel. As a consequence of these changes, or as a consequence of changes in assessment procedures, recordkeeping procedures or performance standards, staff development activities may be called for. While cost minimizing procedures can be introduced into curriculum development and staff development programs, both education personnel and members of the community must be aware that in entering the arena of competency based education some costs will be incurred along these lines.

In addition to measurement, curriculum and staff development costs, a district that wishes to implement a Model I based program needs to be aware that the costs involved in operating such a program are likely to be greater than those involved in operating a non-competency based program. Time and energy are required for assessing desired learning outcomes, maintaining individual student records, and reporting outcome achievement information to patrons. Time and energy also are consumed by remediation programs, and by program improvement activities that are likely to stem from increased sensitivity to outcome achievement information. Taken by themselves, these added obligations could increase the cost of program operation by as much as ten or fifteen percent, but since few school budgets could accommodate such a cost increase, the added costs will tend to be absorbed through increased efficiencies of instruction and assessment, or decreased expenditure of time and energy in other activities.

Benefits To Be Expected

The major benefit that comes from implementing a program based upon this particular model of competency based education, is one of being sure that students graduating from a school system possess the basic skills assumed to be needed to function effectively in life roles subsequent to their graduation. Related benefits include an awareness of program strengths and weaknesses, as evidenced by outcome achievement on the part of students moving through various programs of instruction, and an awareness of the strengths and weaknesses of individual students so far as basic skills are concerned. Both provide an information base that permits teachers to adjust their instruction accordingly.

It will be argued by some that such benefits do not warrant the costs involved in implementing a competency based program of this kind.

Others, however, will take the opposite view. Each community, of course, will have to make its own determination in this regard.

Limitations And Liabilities

Within the framework of a fully developed competency based educational program, Model I has a number of limitations. These include its focus only on basic skill development, its limited attention to the individualization of instruction, the absence of well developed program evaluation and improvement procedures, and the absence of wide-spread community involvement in the design and operation of the program. As stated in the initial description of the model, it represents a "no nonsense", "no frills" approach to schooling. As such it probably represents a model of competency based education that many communities and schools would choose to implement.

Schools that wish ultimately to implement a more fully developed competency based program might also choose to start with this relatively simple model, both as a way to determine whether CBE is really as desirable as it sounds and as a manageable way to start.

The liabilities that go with a Model I based program are those that accompany any competency based program, namely, students being obligated to achieve designated outcomes in order to graduate, and schools being obligated to provide instructional programs that afford reasonable opportunity for students to achieve such outcomes. From the point of view of some students and school personnel, a related set of liabilities include students having to persist in their learning until desired outcomes are in fact achieved, and school personnel having to continuously review and improve programs of instruction to be sure they do in fact achieve the outcomes expected of them. It is doubtful that parents and members of the community in general would share this view.

Model 2. A Fully Individualized, Community-Referenced, Basic Skills Model That Incorporates Cost-Effectiveness Data

Model 2 has much in common with Model 1, but it calls for more of the advantages that can be gained through a competency based mode of operation. Like Model 1 its focus is basic skill development. In contrast to Model 1, however, it is more fully individualized (students have access to differing amounts of time as well as alternative learning experiences in achieving particular outcomes); the basic skills to be demonstrated in order to graduate, and the indicators to be used as evidence of their achievement, are established cooperatively by school personnel and members of the community at large; and programs of instruction are evaluated both in terms of their cost and their effectiveness. Like Model 1, Model 2 still represents a "no nonsense", "no frills" approach to schooling so far as graduation requirements are concerned, but it does provide for more flexibility in terms of outcome attainment by students, more involvement in the design of the educational process by members of the community, and more commitment to program evaluation as a basis for program improvement. The model in full (Model IIC-e 3,5,7,8) is charted in Figure 9.

Conditions Of Implementation

If a school system wishes to implement an educational program based on this model, three conditions must exist above and beyond those needed to implement a program based on Model 1. These include

- Instructional programs that incorporate in their design an opportunity to vary time spent in outcome acquisition and demonstration as well as an opportunity to pursue alternative learning experiences in achieving a particular outcome;

A PROGRAM CHARACTERISTIC ON WHICH THERE IS NO CHOICE

(POINT A)

A PERFORMANCE-BASED APPROACH TO INSTRUCTION/ASSESSMENT

THE INSTRUCTION/ASSESSMENT DIMENSION

	The "Individualization" Of The Instruction/Assessment Process		The "Personalization" Of The Instruction/Assessment Process	
	B	C	D	E
	A, plus alternative/ negotiable means by which to achieve desired outcomes	B, plus alternative/ negotiable time limits within which to achieve desired outcomes	C, plus alternative/ negotiable measures of outcome achievement	D, plus alternative/ negotiable outcomes to be achieved
THE OUTCOME DIMENSION				
I Mastery of knowledge				
II I, plus demonstration of skills				
III II, plus demonstration of attitudes, values and interpersonal orientations				
IV III, plus ability to function effectively in life roles				

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THE PROGRAM INCLUSIVENESS DIMENSION

a. Selected outcomes/units within course(s) ____
b. One or more courses within a building ____
c. Sequences of courses or segments of programs within a building ____
d. Within building programs ____
e. Sequences of courses or segments of programs that cross-cut buildings ____
f. District wide programs ____
g. Total building curriculum ____
h. Total district curriculum ____

THE PROGRAM OPERATION DIMENSION

1. Student referenced (review, critique, evaluate) ____
2. Student assisted (advise, instruct, assess) ____
3. Community referenced (review, critique, evaluate) ____
4. Community assisted (advise, instruct, assess) ____
5. Short term program evaluation/improvement system ____
6. Long term program evaluation/improvement system ____
7. Outcome achievement a basis for program placement decisions ____
8. Outcome achievement a basis for graduation ____

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Figure 9. A fully individualized, community-referenced, basic skills model that incorporates cost-effectiveness data (Model IIC-e 3,5,7,8)

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- The means by which school personnel and members of the community can identify cooperatively the basic skills required for graduation, and the indicators to be used as evidence of their achievement; and

- The means by which information is to be obtained on the cost and effectiveness of instructional programs that facilitate the acquisition of basic skills, and used for purposes of program improvement decisions.

The increased complexity in program operation that comes with these additions will cause the program management and administrative procedures that support Model 2 based programs to be more complex than those that support programs based on Model 1.

Development Likely To Be Needed

Schools or communities that wish to implement Model 2 based programs face one major developmental task and two organizational-administrative tasks that are above and beyond those required to implement a program based on Model 1. The developmental task is one of designing and implementing a program evaluation procedure that identifies the cost and determines the effectiveness of instructional programs in bringing about the basic skills desired for graduation. This is a relatively complex task, but fortunately a number of program evaluation models are now available as points of reference (Stake, 1967; Scriven, 1967; Provus, 1971; Stufflebeam, et al., 1971). Another is the Handbook for Program Evaluation developed by members of the Mid-Willamette Valley Consortium for Educational Development in Oregon (Schalock, et. al., 1976). The handbook is particularly useful in that it is designed as a workbook, and it focuses on both cost and effectiveness data. It also is flexible in that it can be applied to a total K-12 program or any segment of such a program.

The demands of the model with respect to time variation for outcome achievement and community involvement in outcome and indicator definition

will most likely cause adopting districts to engage in additional developmental activities, but the major implications of these two characteristics of the model are essentially organizational and administrative in nature. The organization and scheduling of classes, for example, will need to accommodate the greater flexibility in time. Structures and procedures will have to be established that permit school personnel and members of the community to work cooperatively in establishing the basic skills to be achieved. Time will have to be built into curriculum development and review schedules to accommodate this interactive process. All of these, however, are largely organization-administrative tasks rather than basic developmental tasks.

Because Model 2 demands several aspects of program operation that are unfamiliar to most school personnel, rather wide ranging staff development programs probably will need to accompany the implementation of a Model 2 based program -- especially so with respect to the collection and use of program evaluation data if a school system does not have on its faculty evaluation specialists.

Costs To Be Anticipated

Both program development and program operation costs will be greater for Model 2 based programs than for Model 1 programs, but by far the greatest increase in cost will be accounted for in cost of program operation. While allowing students more control over the use of their time should have little effect upon program costs, the involvement of parents and members of the community in program design decisions, and the collection of cost and effectiveness data as a basis for program improvement decisions, will add to the cost of program operation. The precise cost of both, of course, will depend upon the form they take, but school officials

contemplating the adoption of Model 2 as a guide to program design need to be aware that these two characteristics of the model will increase the cost of program operation appreciably. It also needs to be recognized that it is difficult to absorb these costs in ongoing instruction programs. They are instruction-related activities, and as such tend to be clear and simple "add on" costs to instruction.

Benefits To Be Expected

Districts that implement a Model 2 based program can expect to share the same benefits that come with programs based on Model 1 (see p 116), and a number of additional benefits as well. Model 2 provides clear-cut benefits to students in the form of greater control over time, at least so far as the time required for basic skill mastery. It also provides clear-cut benefits to the community at large. These come in two forms. The first takes the form of confidence that the schools are fostering the development of the basic skills that are held to be important in the community. The second takes the form of clear-cut evidence as to both the cost and the effectiveness of the various instructional programs offered by the schools in achieving the basic skills desired.

School personnel also benefit from Model 2 characteristics. Some are direct benefits; some are indirect. Instruction, for example, is made easier when time is allowed to vary for the achievement of particular outcomes, and instruction can be made more efficient and effective when information is available on the cost and effectiveness of particular instructional programs. Indirect benefits accrue to instructional staff through knowing that patrons of the schools are supportive of at least one set of outcomes that the schools are trying to achieve, and through being able to work with students who are clear about outcomes to be

achieved and who have some sense of control over when and how they are to be achieved.

All in all these represent a sizable array of benefits, but whether they justify the greater costs of Model 2 as compared to Model 1 based programs is a decision that can be made only by the adopting community.

Limitations And Liabilities

Three of the limitations associated with Model 1 would be effectively reduced by implementing a Model 2 based program. These are the restricted view of the individualization of instruction that accompanys Model 1, the limited information available on program effectiveness in Model 1, and the minimal involvement of parents and members of the community in Model 1 based program design decisions. Model 2 based programs still carry serious limitations, for example, limiting the outcomes to be demonstrated for graduation to basic skills and the absence of information on program benefits, but compared to Model 1 its limitations are much less handicapping.

Because each benefit associated with a competency based education program seems to carry a related liability, the characteristics that differentiate Model 2 from Model 1 carry a sizable set of liabilities. Providing students an option with respect to time allowed for outcome acquisition and demonstration, for example, carries with it the danger of student procrastination and abuse of privilege. Opening the outcome identification process to broad public involvement carries with it a major commitment of time, and the danger that school personnel and members of the community will not be able to agree on the basic skills to be acquired through the schools. The availability of cost and effectiveness information on school programs make both teachers and administrators much more vulnerable to citizen attack and control. These obviously are

factors that need to be considered by adopting communities, for they add significantly to the cost-benefit equation.

Model 3. A Partially Individualized, Board-Referenced, Total Curriculum Model That Makes Use Of Students As Teaching Assistants

Model 3 resembles Model 1, with two exceptions: it incorporates all instructional offerings, instead of being limited to basic skills, and it incorporates students as assistants in the instructional process. In some respects Model 3 represents a relatively "expansive" approach to competency based education; in others it represents a relatively conservative approach. It is expansive in that it calls for the total curricular offerings of a district to be treated within a competency based mode of operation, and it calls for students to assist with the instructional process -- both as a means of reducing instructional costs and enhancing their own learning (Allen, Feldman and Devin-Sheehan, 1976). It is conservative in that it calls for only a partially individualized approach to instruction, it does not call for extensive involvement on the part of parents and members of the community in program design decisions, and it does not call for program cost and effectiveness information to be used as a basis for program improvement. The model in full (Model IIIB-h 2,7,8) is charted in Figure 10.

Conditions Of Implementation

All of the conditions that must exist to implement a Model 1 based program must exist to implement a Model 3 based program, but at a level of inclusiveness that makes the latter a totally different order of business. Rather than having simply to specify the basic skills to be demonstrated for graduation, and develop the measurement and recordkeeping

A PROGRAM CHARACTERISTIC ON WHICH THERE IS NO CHOICE

(POINT A)

A PERFORMANCE-BASED APPROACH TO INSTRUCTION/ASSESSMENT

THE INSTRUCTION/ASSESSMENT DIMENSION

	The "Individualization" Of The Instruction/Assessment Process		The "Personalization" Of The Instruction/Assessment Process	
	B	C	D	E
THE OUTCOME DIMENSION	A, plus alternative/ negotiable means by which to achieve desired outcomes	B, plus alternative/ negotiable time limits within which to achieve desired outcomes	C, plus alternative/ negotiable measures of outcome achievement	D, plus alternative/ negotiable outcomes to be achieved
I Mastery of knowledge				
II I, plus demonstration of skills				
III II, plus demonstration of attitudes, values and interpersonal orientations				
IV III, plus ability to function effectively in life roles				

THE PROGRAM INCLUSIVENESS DIMENSION

a. Selected outcomes/units within course(s) _____
b. One or more courses within a building _____
c. Sequences of courses or segments of programs within a building _____
d. Within building programs _____
e. Sequences of courses or segments of programs that cross-cut buildings _____
f. District wide programs _____
g. Total building curriculum _____
h. Total district curriculum _____

THE PROGRAM OPERATION DIMENSION

1. Student referenced (review, critique, evaluate) _____
2. Student assisted (advise, instruct, assess) _____
3. Community referenced (review, critique, evaluate) _____
4. Community assisted (advise, instruct, assess) _____
5. Short term program evaluation/improvement system _____
6. Long term program evaluation/improvement system _____
7. Outcome achievement a basis for program placement decisions _____
8. Outcome achievement a basis for graduation _____

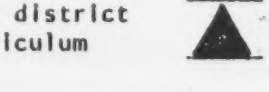

Figure 10. A partially individualized, board-referenced, total curriculum model that makes use of students as teaching assistants (Model IIIB-h 2,7,8)

systems needed to obtain evidence that pertains thereto, these aspects of program development must be in place for all segments and phases of the curriculum offered within a school system. Operationally this means that the outcomes desired from each program of instruction offered within a district have been identified; indicators, measures, and performance standards relative to these outcomes have been established; instructional programs, remediation systems and recordkeeping systems geared to the achievement of these outcomes are in place; and the management and administrative structures needed to support all of the above are functional. In addition, Model 3 requires that of the various outcomes to be achieved by a school system a particular set of outcomes have been identified as those to be demonstrated for purposes of graduation. These represent an infinitely more complex set of prerequisites that those needed to implement a Model 1 or Model 2 based program, though they obviously are only extensions of the conditions required by the simpler models.

One further condition must be met for a Model 3 based program to be implemented, namely, clarity as to where in the curriculum students are to serve as instructional assistants, and what they are to do specifically in doing so. This is not a particularly difficult condition to meet, but it does require careful planning on the part of instructional faculty and extensive training on the part of students who are to function as assistants.

Development Likely To Be Needed

The major areas of development likely to be faced by a district that wishes to implement a Model 3 based program follow directly from the enabling conditions listed above. If an adopting district already has these conditions established, the development needed will be small. If they are

not established, or if they are only partially established, the requirements for development will be large. So too will the requirements for staff development. If essentially all of the conditions listed above are yet to be established, a district should allow at least three years for full implementation and probably five. Under these conditions the decision to implement a Model 3 based program must be viewed as a major undertaking by a community, with time and resources and expectations allocated accordingly. In light of these considerations it is probable that only those districts most committed to the idea of competency based education will be willing and able to meet the demands of development that accompany the implementation of a Model 3 based program.

Costs To Be Anticipated

As in the case of districts that decide to implement a Model 1 based program, the largest share of program development costs in implementing a Model 3 based program are likely to be taken by the development of measures of desired learning outcomes. Some resources are likely to be required for the identification of desired outcomes, some for the clarification of performance standards, some for the development of record keeping systems, some for the development of alternative learning experiences in existing instructional programs, and some for the development of remediation programs, but together these developmental costs probably will not exceed those required for the development of outcome measures. Specific cost estimates cannot be given for these developmental tasks, since costs will be determined by the amount of work that remains to be done on them, the quality of work that has been done, who within the district is to do the developmental work, the size of the district, etc., but it is clear that most districts wanting to implement such a

program will have to earmark a sizable portion of its budget (3%? 5%? 7%?) for developmental activities and to do so over a number of (3 to 5) years.

Much the same situation exists with respect to costs to be anticipated for staff development -- it all depends. If staff are familiar with such an approach to schooling, training costs will be small. If they are not familiar with such an approach they will be large. Staff development costs also will depend on the involvement of staff in the program development process. If instructional and administrative staff carry major responsibility for program development, the need for staff training to make the program operate will be reduced -- since staff have essentially created the program. If others within the district are primarily responsible for program development, however, for example, a "program development and evaluation staff", or persons outside of the district are responsible, for example, local college personnel, the need for staff training will be increased.

A firmer estimate of costs to be expected can be provided for program operation. As in the case of Model 1 based programs these should not exceed ten to fifteen percent of the operational costs involved in non-CBE programs, and they should be more easily absorbed when dealing with the curriculum as a whole than with only the few programs that focus on the development of basic skills.

Generally speaking both developmental and operational costs for Model 3 based programs will exceed those of Model 1 and 2 programs simply because of the greater mass of program involved. Some economies may emerge as a result of scale, but so little is known about the actual cost of developing and operating competency based programs that little can be said in this regard at this time.

Benefits To Be Expected

The major benefit that derives from implementing a Model 3 competency based educational program is the achievement of the essential condition needed for a school to become "accountable" in the fullest sense of the term. The outcomes desired from schooling are specified, and evidence of outcome achievement are collected. In a strict sense of the term, however, Model 3 is not an accountability model, for it does not require that cost effectiveness and cost benefit data be used as a basis for program improvement. These elements could be added to the model with relative ease, of course, so in a sense the model anticipates this kind of orientation. Other benefits include the greater clarity and understanding on the part of both students and teachers as to what is expected of them within the schools, and a general awareness on the part of education personnel and the community at large of program strengths and weaknesses -- as these are evidenced by student achievement as they move through the various programs of instruction offered within a district.

Limitations And Liabilities

The major limitation of Model 3 is its essential imbalance. It calls for a great deal of attention to be directed to outcome clarification and attainment, but very little attention to be directed to the effective utilization of information that comes with such a focus. Information on outcome attainment should be used systematically by schools as a basis for increasing program effectiveness, program efficiency, and assuring that the outcomes being pursued by the schools are in fact the outcomes desired by the community at large.

The major liabilities associated with Model 3 are those that parallel

the benefits that accrue from an outcome oriented approach to instruction. For students and teachers, the major liabilities are an increased responsibility for performance, and an increased exposure as to quality of performance. For a school system as a whole, it means an increased exposure as to strengths and weaknesses, and with it an increased vulnerability to criticism as well as an increased opportunity to improve. As with the other models discussed in the chapter, the limitations and liabilities that accompany a Model 3 based program must be taken into account when considering its overall costs and benefits.

Model 4. A Partially Personalized, Community-Referenced, Total Curriculum Model That Incorporates Cost-Effectiveness Data

Model 4 is designed to correct the imbalance that characterizes Model 3. As in the case of Model 2, it calls for community involvement in the design of instructional programs, and evidence as to the cost and effectiveness of instructional programs. It also calls for the instruction-learning process to be fully individualized so far as students having access to alternative learning activities and options in the amount of time available to achieve particular outcomes. Finally, it calls for the instruction-learning process to be at least partially personalized, that is, for students to be able to influence the choice of indicators to be looked to as evidence of outcome achievement. Model 4 obviously represents an unusually complex approach to schooling, but it is actually the first model thus far described that begins to capture the full meaning of a competency based approach to education. It is also a model that begins to strike a balance between the harshness of an "accountability" model and the responsiveness to individual differences

of a "humanistic" model. Finally, of the six models described in the chapter Model 4, is the one that represents most closely the model of competency based education being implemented in Oregon. The model in full (Model IIID-h 3,5,7,8) is charted in Figure 11.

Conditions Of Implementation

If a district has implemented a competency based program of a Model 3 variety, either as a first step in the program development process or as a second step after starting initially with Model 1, three additional conditions must be met in order to effectively implement a Model 4 program. These include

- Instructional programs that include in their design alternative approaches to the assessment of outcome achievement, as well as an opportunity to vary time spent and learning activities pursued in outcome acquisition;
- The means by which school personnel and members of the community can reach agreement on the outcomes to be achieved by the local school system, including those to be demonstrated for purposes of graduation; and
- The means by which to obtain information on the cost and effectiveness of the various instructional programs offered by the district, and to use this information for purposes of program improvement.

Management and administrative procedures also will have to have been established that accommodate the added complexity of program operation that come with these additions to Model 3.

Development Likely To Be Needed

Assuming a district already has implemented a program that reflects the characteristics of Model 3, two major developmental tasks and a number of organizational-administrative tasks must be dealt with if a program that reflects the characteristics of Model 4 is to be implemented. One

A PROGRAM CHARACTERISTIC ON WHICH THERE IS NO CHOICE

(POINT A)

A PERFORMANCE-BASED APPROACH TO INSTRUCTION/ASSESSMENT

THE INSTRUCTION/ASSESSMENT DIMENSION

THE OUTCOME DIMENSION	The "Individualization" Of The Instruction/Assessment Process		The "Personalization" Of The Instruction/Assessment Process	
	B	C	D	E
I Mastery of knowledge	A, plus alternative/ negotiable means by which to achieve desired outcomes	B, plus alternative/ negotiable time limits within which to achieve desired outcomes	C, plus alternative/ negotiable measures of outcome achievement	D, plus alternative/ negotiable outcomes to be achieved
II I, plus demonstration of skills				
III II, plus demonstration of attitudes, values and interpersonal orientations				
IV III, plus ability to function effectively in life roles				

THE PROGRAM INCLUSIVENESS DIMENSION

a. Selected outcomes/units within course(s) _____
b. One or more courses within a building _____
c. Sequences of courses or segments of programs within a building _____
d. Within building programs _____
e. Sequences of courses or segments of programs that cross-cut buildings _____
f. District wide programs _____
g. Total building curriculum _____
h. Total district curriculum _____

THE PROGRAM OPERATION DIMENSION

1. Student referenced (review, critique, evaluate) _____
2. Student assisted (advise, instruct, assess) _____
3. Community referenced (review, critique, evaluate) _____
4. Community assisted (advise, instruct, assess) _____
5. Short term program evaluation/improvement system _____
6. Long term program evaluation/improvement system _____
7. Outcome achievement a basis for program placement decisions _____
8. Outcome achievement a basis for graduation _____

Figure 11. A partially personalized, community-referenced, total curriculum model that incorporates cost-effectiveness data (Model IIID-h 3,5,7,8)

of the developmental tasks is to design alternative procedures for assessing each learning outcome to be achieved, a task of no mean undertaking. The other involves the design of a program evaluation procedure that identifies the cost and determines the effectiveness of instructional programs in bringing about the outcomes desired of them. As indicated previously,this task can be simplified by drawing upon any of a number of program evaluation models that exist, or by modifying the Program Evaluation Handbook developed by the Mid-Willamette Valley Consortium for Educational Development so that it meets specific program requirements.

A number of organizational-administrative changes also will have to be made to support program operation. One of these is the organization and scheduling of classes in a manner that accommodates the increased flexibility available to students by way of time utilization, learning activities pursued and assessment procedures used. Another is the creation of structures and procedures that permit school personnel and members of the community to reach agreement about outcomes to be achieved through schooling. Still another is the creation of structures and procedures that will enable the collection of cost and effectiveness data relative to program operation, the reduction and analysis of these data, and their review from the point of view of program improvement decisions.

Establishing structures and procedures that facilitate these various dimensions of schooling represents a complex task for any school administrator. Finding the time and resources to carry them out may be even more challenging. When the staff development programs needed to prepare teachers, administrators and support personnel to function effectively within such an approach to schooling are added to all of the above, it would not be surprising to hear school administrators cry ENOUGH, and turn to a simpler model of schooling.

Costs To Be Anticipated

Assuming that a district that wishes to implement a Model 4 program already has in operation a program based on Model 3 characteristics, additional development costs should not be great. Some resources will be required to develop alternative assessment procedures, and some to develop the evaluation system that provides cost-effectiveness information, but these are not great when compared to the developmental costs involved in the initial transformation of a school curriculum from a non-competency based to a competency based mode of operation. Some resources also will be needed to prepare staff development programs, to establish procedures for working with parents and members of the community in identifying outcomes to be achieved by the local school system, and to developing management and administrative procedures to accommodate all of the above, but again these should not be great.

As in the case of Model 2, Model 4 has greater implications for the cost of program operation than it does for program development. The individualization and personalization of instruction requires time and instructional resources, not required by an approach to schooling, that encourages all students to work toward a common set of learning outcomes within a particular course or course sequence. Working cooperatively with parents and members of the community in identifying outcomes to be achieved, and reviewing data to determine how well they have been achieved, also adds to program cost. So too does the collection of information on program cost and effectiveness, and the review of this information for purposes of program improvement.

As in the case of other model based programs, these costs will vary depending upon the extent to which the program is individualized or personalized, the nature and extent of interaction with parents, etc.; but

no matter how simple or streamlined these various practices may be, they still will add to the cost of program operation. Moreover, as pointed out in relation to Model 2, these are costs not easily absorbed within ongoing instructional programs for they represent essentially add-on costs to instruction.

Without question,a competency based program based on Model 4 will cost more to operate than a program based on Model 3, but the benefits to be gained also are greater. Whether the costs outweigh the benefits is a decision that each community must make.

Benefits To Be Expected

Model 4 holds clear-cut benefits over Model 3 for students, parents, and members of the community at large. Students have greater control over their own instructional programs, including the indicators to be looked to as evidence of outcome achievement. Parents and other members of the community are able to see how effective the schools are in achieving the outcomes expected of them, and how the costs of individual programs relate to their effectiveness. They also are able to influence directly and continuously the kind of outcomes to be pursued within the local school system, and the kind of evidence to be looked to in judging outcome achievement.

School personnel also benefit from Model 4 characteristics. Like students, they are much clearer about the outcomes to be achieved within their respective instructional programs, and they have some assurance that the outcomes being pursued are those desired by parents and members of the community at large. Teachers also have a chance to make their instruction more effective when they have access to information on student progress and students have access to learning and assessment options.

There are accompanying liabilities, of course, but taken in combination these represent an impressive array of benefits to be gained through a program of the kind called for in Model 4.

Limitations And Liabilities

Compared to the two remaining models of competency based education to be described, Model 4 carries three limitations. The first is the absence of role-defined outcomes to be achieved as a basis for graduation. The second is the absence of information on program benefits. The third is the failure of the model to fully personalize the instruction-learning process, that is, the failure to let students negotiate at least some of the outcomes they are to take from their schooling experience. Some would argue that these are serious limitations, especially the lack of role-related outcomes and the failure to give as much control as possible to students for the design of their own educational programs. Others would argue that these are not particularly critical short-comings, and would opt by preference for an instructional program that reflects the characteristics of Model 4 over the more complex models that follow. The liabilities associated with the model are largely those associated with Models 2 and 3 (see pp 124 and 130).

Model 5. A Fully Personalized, Community-Referenced, Role Based Model That Incorporates Cost-Benefit Data

Model 5 has three important characteristics that set it apart from and make it more powerful than Model 4. These are the increased personalization of the program so that students can negotiate at least some of the outcomes to be achieved through schooling; the inclusion as outcomes to be achieved through schooling, and particularly as outcomes

to be demonstrated for purposes of graduation, the demonstrated ability to perform role-related tasks in out-of-school contexts; and the inclusion of information on program benefits as well as information on program cost and effectiveness. As used in the present paper, program benefit information includes evidence of both short term and long term benefits, with evidence of long term benefits coming essentially through program related research. The addition of these characteristics to Model 4 makes Model 5 an unusually promising approach to education. They also make it an approach to competency based education that is even more complex and demanding than the model being adopted in Oregon. The model in full (Model IVE-h 3,6,7,8) is charted in Figure 12.

Conditions Of Implementation

Assuming that a district has in full operation a Model 4 based program, the implementation of a Model 5 based program would require that four additional conditions be met. These are

- The identification of outcomes desired from schooling that reflect the ability of students to function effectively in life roles in out-of-school contexts;
- The development of instructional programs, remediation programs, assessment procedures and performance standards that pertain to the acquisition and demonstration of role-related outcomes;
- The adoption of instructional and assessment procedures that permit students to select at least some of the outcomes to be achieved through schooling, and some of the indicators to be used as evidence of outcome achievement; and
- The establishment of procedures that enable the collection of information on both the short term and long term benefits associated with the program.

All four of these conditions add to the complexity of program operation, and as a consequence cause a corresponding increase in the complexity of program management and administrative procedures in order to accommodate their impact.

A PROGRAM CHARACTERISTIC ON WHICH THERE IS NO CHOICE

(POINT A)

A PERFORMANCE-BASED APPROACH TO INSTRUCTION/ASSESSMENT

THE INSTRUCTION/ASSESSMENT DIMENSION

THE OUTCOME DIMENSION	The "Individualization" Of The Instruction/Assessment Process		The "Personalization" Of The Instruction/Assessment Process	
	B	C	D	E
I Mastery of knowledge	A, plus alternative/ negotiable means by which to achieve desired outcomes	B, plus alternative/ negotiable time limits within which to achieve desired outcomes	C, plus alternative/ negotiable measures of outcome achievement	D, plus alternative/ negotiable outcomes to be achieved
II I, plus demonstration of skills				
III II, plus demonstration of attitudes, values and interpersonal orientations				
IV III, plus ability to function effectively in life roles				

THE PROGRAM INCLUSIVENESS DIMENSION

a. Selected outcomes/units within course(s) _____
b. One or more courses within a building _____
c. Sequences of courses or segments of programs within a building _____
d. Within building programs _____
e. Sequences of courses or segments of programs that cross-cut buildings _____
f. District wide programs _____
g. Total building curriculum _____
h. Total district curriculum _____

THE PROGRAM OPERATION DIMENSION

1. Student referenced (review, critique, evaluate) _____
2. Student assisted (advise, instruct, assess) _____
3. Community referenced (review, critique, evaluate) _____
4. Community assisted (advise, instruct, assess) _____
5. Short term program evaluation/improvement system _____
6. Long term program evaluation/improvement system _____
7. Outcome achievement a basis for program placement decisions _____
8. Outcome achievement a basis for graduation _____

Figure 12. A fully personalized, community-referenced role-based model that incorporates cost-benefit data (Model IVE-h 3,6,7,8)

Development Like To Be Needed

If a district wishes to move a Model 4 based program to one that reflects the characteristics of Model 5 two major development activities would have to be undertaken. One would involve the identification of life role outcomes, building instructional programs and assessment procedures for the acquisition and demonstration of these outcomes, etc. The other would involve the design of research studies to provide information on the short term and long term benefits that come from the program, with long term benefits having to be obtained essentially through a longitudinal or follow-up research design.

Both represent complex and pioneering tasks. The assessment of life role performance in out-of-school contexts involves an approach to outcome measurement that is not well understood and that has few examples on which to build (Schalock, et. al., 1976). The design of research to obtain program benefit information is equally primitive (Schalock, Kersh and Garrison, 1976). In spite of such acknowledged handicaps, Model 5 (and Model 6) are based on the assumption that both program characteristics can be implemented, and that they need to be if schooling is to become as effective as it can and should be.

In addition to these developmental tasks, a number of organizational-administrative tasks must also be accomplished. Chief among these is the organization and scheduling of classes (or other units of instruction) to accommodate the acquisition and demonstration of role-related outcomes. Since instruction and assessment in relation to such outcomes is likely to cross-cut traditional course structures, and even take place outside of the school context, considerable adaptation in course structure and scheduling is likely to be needed. Instructional management procedures also will have to be modified to accommodate the increased personalization of the instruction-learning-assessment process.

As in all aspects of program development, the specific organizational-administrative structures needed to accommodate the demands of such a program cannot be determined in the abstract, for they will depend upon the specifics of the program being implemented. Generally speaking, however, it is evident that such structures will differ in important ways from the organizational-administrative structures that have been used traditionally in elementary and secondary schools, and adopting districts need to be prepared to move accordingly.

Costs To Be Anticipated

Even if a district already has implemented a Model 4 program, a shift to a program based on the characteristics of Model 5 will involve considerable additional cost. Some of the costs will be directed to program development; some to program operation; and some to staff development. Major program development costs will center on the preparation of instructional programs and assessment systems that support the acquisition and demonstration of role-related competencies, including the identification of acceptable performance standards in relation to these competencies, record keeping systems to be used in tracking progress in relation to them, etc. Increased program operation costs will come with the addition of instruction and assessment activities that relate to role-related outcomes -- which are essentially costs above and beyond those associated with already established instructional programs -- and with the collection of both short and long term program benefit information. Research in general is costly, and follow-up research on program benefits is no exception.

Some additional costs also are likely to accrue as a result of fully personalizing the instruction-learning-assessment process, for undoubtedly

this will reduce some of the "efficiences" that accompany instruction and assessment procedures that do not take into full account individual differences in background, abilities and interests.

Costs to be anticipated for staff development also are considerable, for Model 5 calls for the pursuit of outcomes and approaches to instruction and assessment that are relatively new to the experience of most teachers, administrators and school support personnel. As a consequence, most districts attempting to implement a Model 5 based program probably will have to implement an accompanying staff development program that would include in its focus the nature of role-related outcomes; the nature of instruction and assessment with respect to these outcomes; how these instruction and assessment procedures are to be articulated with instruction and assessment that bears on other outcomes to be achieved; how information relative to the achievement of these outcomes is to be managed; and the full range of implications that come generally with the personalization of instruction and assessment within a school system. While it is possible that the faculty of a district that wishes to implement a Model 5 program would not need such a program, it is highly unlikely.

Benefits To Be Expected

There are three major benefits that accompany the implementation of competency based educational programs that reflect the characteristics of Model 5. Probably the greatest of these is the benefit that derives from the focus of the model on life role outcomes, and making their achievement central to graduation. The nature of these benefits have been discussed repeatedly throughout the paper (cf pp 27 to 29 and 53 to 57). Other benefits that accrue from the implementation of a Model 5 program come to students in the form of greater control over their personal programs of study, i.e., the benefits that come from personalizing

the instruction-learning-assessment process, and to school personnel and members of the community generally in the form of evidence about the short and long term benefits that derive from such a program. An added benefit comes with the opportunity to view such information in relation to program cost. Some indirect benefits are also likely to accrue, for example, increased interest in and commitment to learning by students as a consequence of an increased opportunity to shape their own educational programs and increased confidence in and support of the work of the schools by members of the community at large.

Limitations And Liabilities

Model 5 represents such an idealized approach to competency based education that it has very few limitations, at least so far as the concept of competency based education has been articulated in the present paper. The model does not call for cost effectiveness data, however, and it does not call for community assistance in the instruction and assessment process (as does Model 6), but by most people's standards these would not be considered as serious limitations. All of the liabilities that accompany a competency based educational program accompany a Model 5 program, and as a consequence, the list of accompanying liabilities is essentially as long as the list of accompanying benefits.

Model 6. A Fully Personalized, Community-Assisted, Role Based Model That Incorporates Both Cost-Effectiveness And Cost-Benefit Data

Model 6 has two important characteristics that set it apart from and makes it more powerful than Model 5. These are reliance upon adults within the community to assist with instruction and assessment programs, and the addition of cost-effectiveness information to information on

program benefits. The addition of these two characteristics to Model 5 fashions the most powerful version of competency based education that the framework outlined in the present paper permits. The model in full (Model IVE-h 4,5,6,7,8) is charted as Figure 13.

Conditions Of Implementation

Assuming that a district wishing to implement a Model 6 program already has in place a program reflecting the characteristics of Model 5, only one critical condition needs to be established for an effective transition to occur. This is the commitment on the part of members of the community to assist with instruction and assessment functions within the program -- particularly those having to do with the performance of life role tasks --, a cadre of persons within the community able to carry out such functions, and a plan for program management and administration that permits school and community resources to be effectively coordinated.

The design of evaluation procedures that yield information on program effectiveness is also a condition that needs to be established, but this is a relatively simple task compared to the marshalling and coordination of community resources.

Development Likely To Be Needed

Relatively few developmental tasks of the kind encountered in implementing programs based on Models 1 through 5 will be encountered by districts attempting to implement Model 6, assuming, of course, that the implementing district already has established a program that reflects the characteristics of Model 5. Some formal program development activities may be required to facilitate instruction and assessment functions by members of the community, and to help school personnel and members of the community understand their respective roles in the instruction-assessment

A PROGRAM CHARACTERISTIC ON WHICH THERE IS NO CHOICE (POINT A) A PERFORMANCE-BASED APPROACH TO INSTRUCTION/ASSESSMENT	THE INSTRUCTION/ASSESSMENT DIMENSION			
	The "Individualization" Of The Instruction/Assessment Process		The "Personalization" Of The Instruction/Assessment Process	
	B	C	D	E
THE OUTCOME DIMENSION	A, plus alternative/ negotiable means by which to achieve desired outcomes	B, plus alternative/ negotiable time limits within which to achieve desired outcomes	C, plus alternative/ negotiable measures of outcome achievement	D, plus alternative/ negotiable outcomes to be achieved
I Mastery of knowledge				
II I, plus demonstration of skills				
III II, plus demonstration of attitudes, values and interpersonal orientations				
IV III, plus ability to function effectively in life roles				

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THE PROGRAM INCLUSIVENESS DIMENSION

a. Selected outcomes/units within course(s) _____
b. One or more courses within a building _____
c. Sequences of courses or segments of programs within a building _____
d. Within building programs _____
e. Sequences of courses or segments of programs that cross-cut buildings _____
f. District wide programs _____
g. Total building curriculum _____
h. Total district curriculum

THE PROGRAM OPERATION DIMENSION

1. Student referenced (review, critique, evaluate) _____
2. Student assisted (advise, instruct, assess) _____
3. Community referenced (review, critique, evaluate) _____
4. Community assisted (advise, instruct, assess)
5. Short term program evaluation/improvement system _____
6. Long term program evaluation/improvement system _____
7. Outcome achievement a basis for program placement decisions _____
8. Outcome achievement a basis for graduation _____

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Figure 13. A fully personalized, community-assisted role based model that incorporates both cost-effectiveness and cost-benefit data (Model IVE-h 4,5,6,7,8)

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process, but these are relatively simple tasks compared to those required in the implementation of other models. Some energy also will be required to develop the procedures to be followed in collecting cost-effectiveness information, but these too are relatively simple if cost-benefit information already is being collected. Probably the most demanding developmental activity associated with the implementation of a program based on Model 6 is the creation of the organizational-administrative arrangements needed to ensure that such a program functions smoothly and efficiently. The specific nature of these arrangements, of course, will vary by the nature and extent to community participation, but the fact of having to devise organizational and administrative structures to support such a program cannot be ignored.

Costs To Be Anticipated

Some costs will be involved in carrying out the developmental tasks described above, and although these should not be great considerable time should be allowed for working out the details of community involvement in the program, and agreeing to how community involvement is to be coordinated with the functions and responsibilities of school personnel. Costs associated with staff and community development programs are likely to be considerable, at least in terms of time required for training, since the kind of program to be operated, and the roles and responsibilities of the various participants in it, will be relatively new to all concerned. Costs of program operation, however, should actually be reduced from what they are in Model 5 by bringing the resources of the community to the instruction-assessment process. This saving could well offset the costs required for program and staff development.

Additional costs also will be incurred in implementing the evaluation procedures that provide information on program effectiveness, but these costs should be no greater than they are when such procedures are implemented within the context of a simpler model.

Benefits To Be Expected

The greatest benefit expected to accrue from Model 6, as compared to Model 5, is the increased involvement in and assumed commitment to the instructional program of the district by members of the community at large. A related benefit is the "external validation" that is brought to the program through the involvement of members of the community in its operation -- a benefit that is realized most directly through the involvement of community members in the assessment process. Some savings in personnel costs should also derive from members of the community assuming some responsibility for instruction and assessment, but these gains may be offset by the added cost of community involvement in program planning and evaluation. Benefits also should accrue from the addition of cost-effectiveness information to the information available in Model 5 programs on costs and benefits.

Limitations And Liabilities

So far as the approach to education that is being proposed in the present paper is concerned, Model 6 has been designed to be free of limitations. It is an idealized form of competency based education, as CBE is now understood. As indicated with respect to each of the other models, however, each benefit associated with CBE appears to have an accompanying liability. If this is true Model 6 probably has more liabilities than any of the other models described.

The most obvious liabilities that have not been addressed previously, of course, are those associated with community involvement in the design and operation of schools. While there are clear and distinct advantages to such involvement, if all goes well, there are clear and distinct dangers to such involvement if all does not go well. Dangers include an increased lack of confidence in the schools, endless argument about the form that schooling should take, endless argument about the outcomes to be achieved through schooling, and the feeling by an elected board of education that their responsibilities to a community have been usurped by others. While it is not possible at present to determine whether such liabilities are more imagined than real, especially within the context of a competency based approach to education, the recent history of community-school relations in American's large cities suggests that such liabilities are a distinct possibility.

The Concept Of Alternative Models Of Competency Based Education In Perspective

In Chapter 3 a model of competency based education was defined as "...a well defined, easily recognizable, and functionally different pattern of emphasis or interpretation that can be given the defining and enabling characteristics of CBE" (p 40). Defined in this way, it is possible to establish an essentially endless number of "alternative models" of CBE. The number of defining and enabling characteristics that comprise a competency based program are sufficiently large, and can be combined in sufficiently many ways that possible combinations become legion. Add to this the fact that many options are available for each characteristic at the point of implementation, and the possibility for alternative models is for all intents and purposes without limit.

In approaching the issue of model building in the face of this diversity, the position has been taken that all that is required to formulate a model of competency based education is to specify a reasonable, potentially functional constellation of the defining and enabling characteristics that constitute a CBE program, label it accordingly, and treat it either as a model of CBE or a model based CBE program.

Is such a catholic view of the concept of model useful? Is it logically defensible? In the author's view, the answer to both questions is yes. The definition that has been proposed for competency based education provides its defense. It is useful because it permits a reasonably well defined approach to schooling to assume the wide variety of forms and emphases it must if it is to be accepted and functional. So long as a particular approach to schooling possesses this level of flexibility, it has a chance of accommodating a wide range of philosophies and being workable in a wide range of settings. Without such flexibility, there is little chance of it being acceptable or workable in other than a few select communities.

A judgment as to the utility of the concept of alternative models of competency based education is one thing. A judgment as to the utility of the six models that have been outlined is another. While designed to portray reasonable combinations of the defining and enabling characteristics of competency based education programs, and to reflect programs that vary in complexity as to mode and cost of operation, there is no assurance they will serve effectively as guides to program implementation. They are <u>projected</u> models of competency based education, rather than empirically verified models, and there is no way of knowing whether what has been projected will turn out to be functional in the real world. There also

is no way of knowing whether the projected implications of the various models are realistic, for example, projections as to needed development, complexity of operation, related costs and benefits, or whether they too will turn out to be wide of the mark once program implementation is underway. Ultimately, the research studies that are planned for Oregon will provide evidence on these matters, but until that evidence is in schools interested in implementing a competency based approach to education will have to judge for themselves the stock to be placed in the models outlined.

REFERENCES

Allen, V. L., Feldman, R. S. and Devin-Sheehan, L. Research On Children Tutoring Children. Review of Educational Research. 1976, 46, 355-385.

Blanchard, R. W. Change And Challenge For Education In The 1970's. A publication of the Portland, Oregon Public Schools, 1974.

Block, J. H. "Introduction." In J. H. Block (Ed.), Mastery Learning: Theory and Practice. New York: Holt, 1971.

Bloom, B. S. Learning For Mastery. UCLA Evaluation Comment, May 1968.

Carroll, J. B. A Model of School Learning. Teachers College Record, 1963, 64, 723-733.

Clark, J. P. and Thompson, S. D. Graduation Tests And Graduation Requirements. Prepared by a Special Task Force of the National Association of Secondary School Principals, Reston, Virginia, 1975.

Cronbach, L. J., et al. The Dependability Of Behavioral Measurements. New York: John Wiley, 1972.

Cross, K. P. Accent On Learning: Improving Instruction And Reshaping The Curriculum. San Francisco: Jossey-Bass, 1976.

Crowder, N. A. Automatic Tutoring By Means Of Intrinsic Programming. In E. H. Galanter (Ed.) Automatic Teaching: The State of the Art. New York: Wiley, 1959, 109-116.

Davies, I. K. The Management of Learning. London: McGraw-Hill, 1971.

Eisele, J. E. and Halverson, P. M. Assumptions Underlying Competency-Based Education. In Thrust for Educational Leadership. A publication of the Association of California School Administrators. Vol. 5, No. 2, 1975, 4-6.

Elam, S. Performance-Based Teacher Education: What Is The State Of The Art? Washington, D. C.: American Association of Colleges For Teacher Education, 1971.

Flannagan, J. C. Critical Requirements: A New Approach To Employee Evaluation. Personnel Psychology, 1949, 2, 419-25.

Gage, N. L. and Winne, P. Performance-Based Teacher Education. In Teacher Education, 1975. Chicago: The National Society for the Study of Education, 1975.

Gagné, R. M. (Ed.) Psychological Principles in System Development. New York: Holt, Rinehart and Winston, 1962.

Gagné, R. M. (Ed.) Learning and Individual Differences. A Symposium of the Learning Research and Development Center, University of Pittsburgh. Columbus, Ohio: Charles E. Merrill, 1967.

Gagné, R. M. and Briggs, L. J. Principles of Instructional Design. New York: Holt, Rinehart and Winston, 1974.

Gale, L. E. and Pol, G. Competence: A Definition And Conceptual Scheme. Educational Technology, June, 1975. Pp 19-25.

Glaser, R. (Ed.) Training Research And Education. New York: Wiley, 1962.

Glaser, R. Instructional Technology and the Measurement of Learning Outcomes: Some Questions. American Psychologist, 1963, 18, 519-521.

Glick, I. D., Henning, M. J. and Johnson, J. R. CBE: How to Prevent a Second Orthodoxy. Educational Technology, August, 1975. Pp. 17-20.

Goodlad, J. I. School, Curriculum, and the Individual. Waltham, Mass.: Blaisdell Publishing Co., 1966.

Goor, J., Tomlinson, T. and Schroeder, A. Statewide Developments In Performance-Based Education: A Survey of State Education Agencies, 1976. Washington, D. C.: National Center For Educational Statistics, Department of Health, Education and Welfare, 1976.

Hall, G. E. and Jones, H. L. Competency Based Education: A Process For The Improvement Of Education. Englewood Cliffs, N.J.: Prentice-Hall, 1976.

Hathaway, W. E. and Staff. Oregon Competency Based Education Program: Research And Development On CBE Policies, Environments And Outcomes. A proposal submitted to the National Institute of Education by the Northwest Regional Educational Laboratory, October, 1976.

Hathaway, W. E. (Ed.) The State Of The Art And Plan For CBE Cost Analysis. A document prepared by the Oregon Competency Based Education Program, October, 1976.

Hiveley, W. Introduction to Domain-Referenced Testing. Educational Technology, 1974, 14, 5-10.

Houston, W. R. Competency Based Education. In W. R. Houston (Ed.) Exploring Competency Based Education. McCutchan Publishing Corporation, Berkeley, California. 1974. Pp. 3-15.

Howsam, R. B. Performance-Based Instruction. Today's Education, April, 1972. Pp. 333-337.

Jencks, C., et al. Inequality: A Reassessment of the Effectives of Family and Schooling in America. New York, Basic Books, 1972.

Kapfer, P. G. and Orond, G. F. Preparing And Using Individualized Learning Packages For Ungraded, Continuous Progress Education. Englewood Cliffs, N. J.: Educational Technology Publications, 1971.

Mager, R. F. Preparing Objectives for Instruction. Belmont, Calif.: Fearon, 1962.

Merrow, J. G. The Politics of Competence: A Review of Competency Based Teacher Education. Washington, D. C.: Office of Research and Exploratory Studies, National Institute of Education. 1974.

Millman, J. Criterion-Referenced Measurement. In W. J. Popham, (Ed.). Evaluation In Education: Current Applications. San Francisco: McCutchan, 1974.

Morsh, J. E. Job Analysis in the United States Air Force. Personnel Psychology, 1962, 37, 7-17.

National Assessment of Educational Progress. The Sixth Annual Conference On Large Scale Assessment. Denver, June 14-17, 1976.

O'Connell, W. R. Jr. and Moomaw, W. E. A CBC Primer. Report of a Conference on Competency-Based Curricula in General Undergraduate Programs. Undergraduate Education Reform Project, Southern Regional Education Board, 130 Sixth St. N.W., Atlanta, Georgia. 1975.

Oregon Board of Education. Elementary-Secondary Guide For Oregon Schools. Part I: Minimum Standards For Public Schools. Oregon Department of Education, 942 Lancaster Drive, N.E., Salem, Oregon. 1976.

Parlett, M. and Hamilton, D. Evaluation as Illumination: A New Approach to the Study of Innovatory Programs. Occasional Paper, Centre for Research in the Educational Sciences, University of Edinburgh, Edinburgh, Scotland, October, 1972.

Popham, W. J. and Baker, E. L. Establishing Instructional Goals. Englewood Cliffs, N.J.: Prentice-Hall, 1970.

Popham, W. J. and Husek, T. R. Implications of Criterion-Referenced Measurement. Journal of Educational Measurement, 1969, 6, 1-9.

Pressey, S. L. Development and Appraisal of Devices Providing Immediate Automatic Scoring of Objective Tests and Concomitant Self-Instruction. Journal of Psychology, 1950, 29, 417-447.

Process Standards for Education Personnel Development Programs, 1974. Teacher Standards and Practices Commission, 942 Lancaster Drive, N.E., Salem, Oregon, 97310.

Rosner, B. (Ed.). The Power of Competency Based Teacher Education. Boston: Allyn and Bacon, 1972.

Schalock, H. D. A Competency-Based, Personalized and Field Centered Model of an Elementary Teacher Education Program. Journal of Research and Development in Education, 1970, 3, 68-80.

Schalock, H. D. BEPD, NCERD, and Teacher Education That Makes A Demonstrable Difference. In Ben Rosner (Ed.) The Power of Competency Based Teacher Education. New York: Allyn and Bacon. 1972.

Schalock, H. D. Implications of the Oregon Board of Education's Proposed "Process Standards" for the Design and Operation of Teacher Education Programs. Interpretive paper No. 1: Defining and Assessing Teacher Competence. April, 1973. Mimeographed.

Schalock, H. D. The Impact of Competency Definition on Teacher Preparation Institutions. Educational Leadership, January, 1974. Pp. 318-321.

Schalock, H. D. Closing The Knowledge Gap: CBTE Programs As A Focus Of And Context For Research In Education. Albany, New York: Multi-State Consortium on Performance Based Teacher Education. 1975.

Schalock, H. D. and Garrison, J. H. The Personalization of Teacher Education Programs. In Anderson, D. W., DeVault, M. V., and Dickson, G. E. (Eds.). New Directions In Teacher Education: Problems And Prospects For The Years Ahead. San Francisco: McCutcheon, 1972.

Schalock, H. D. and Hale J. R. (Eds.). A Competency Based, Field Centered Systems Approach to Elementary Teacher Education. Vol. I: Overview and Specifications. Vol. II: Appendices. U. S. Office of Education, Bureau of Research. Project No. 89022. Portland, Oregon: The Northwest Regional Educational Laboratory. 1968.

Schalock, H. D., Kersh, B. Y. and Garrison, J. H. From Commitment to Practice in Assessing the Outcomes of Teaching: A Case Study. In T. E. Andrews (Ed.). Assessment. Albany, New York: Multi-State Consortium on Performance Based Teacher Education. 1973. Pp 58-90.

Schalock, H. D., Kersh B. Y., and Garrison, J. H. From Commitment to Practice: The OCE Elementary Teacher Education Program. Washington, D. C. The American Association for Colleges of Teacher Education. 1976.

Schalock, H. D., Kersh, B. Y. and Horyna, L. L. A Plan for Managing the Development, Implementation, and Operation of a Model Elementary Teacher Education Program. Vols. I & II. Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 1970.

Schalock, H. D., Spady, W. G. and Hathaway, W. E. Alternative Models Of Competency Based Education. A paper prepared for the Oregon Competency Based Education Program, January, 1976.

Schalock, H. D., Keegan, J., Speulda, R., and Thompson, G. Program Evaluation Handbook. A product prepared by the Mid-Willamette Valley Consortium For Educational Development through funds provided by the Oregon Competency Based Education Program. 1976.

Schalock, H. D. and staff from the Dayton, Oregon Public Schools. Developing An Approach To Defining And Assessing Competencies To Be Demonstrated For Graduation That Reflect The Ability To Function Effectively In Life-Roles After Graduation. A product prepared by the Mid-Willamette Valley Consortium For Educational Development through funds provided by the Oregon Competency Based Education Program. 1976.

Shulman, L. S. Reconstruction in Educational Research, Review of Educational Research, 1970, 40, 371-396.

Sherman, D. A., Culver, C. M. and Lieberman, A. (Eds.). Teachers On Individualization: The Way We Do It. New York: McGraw Hill, 1974.

Skinner, B. F. The Technology of Teaching. New York: Appleton-Century-Crofts, 1968.

Smith, B. O. and Orlosky, D. E. Socialization and Schooling: The Basics of Reform. Bloomington, Indiana: Phi Delta Kappa, 1975.

Spady, W. G. Competency Based Education: A Bandwagon In Search of a Definition. A paper submitted for publication in the December issue of Social Problems.

Stolurow, L. M. A Taxonomy of Learning Task Characteristics. AMRL-TDR-64-2, Aerospace Medical Research Laboratories, Wright-Patterson Air Force Base, Ohio, 1964 (AD 433 199).

Webster's New World Dictionary, College Edition, 1971.

Woditsch, G. A. Response made to a conference on competency based education sponsored by the Oregon Competency Based Education Project. Salem, Oregon, February, 1976.